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ABSTRACT

This conference sponsored in part by The Division of Physician Manpower dealt with the problem of communication between premedical and medical education administrators. Four panels, 13 invited speakers, and free discussion among almost 90 participants provided new insight into problems of poor representation by racial minorities, outdated admissions policies, and a need for more information by premedical advisors. In addition, conferees discussed special programs involving advanced placement and flexible curriculums. (BH)

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ARTICULATIONS BETWEEN MEDICAL AND PREMEDICAL EDUCATION

PROCEEDINGS OF A CONFERENCE
AT ASILOMAR, CALIFORNIA
JUNE 6 AND 7, 1969

HAROLD J. SIMON

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ARTICULATIONS BETWEEN MEDICAL
AND
PREMEDICAL EDUCATION

PROCEEDINGS OF A CONFERENCE AT ASILOMAR, CALIFORNIA

JUNE 6 AND 7, 1969

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by

THE WESTERN REGIONAL MEDICAL SCHOOLS

and

THE DIVISION OF PHYSICIAN MANPOWER
BUREAU OF HEALTH PROFESSIONS EDUCATION
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NATIONAL INSTITUTES OF HEALTH
UNITED STATES PUBLIC HEALTH SERVICE
DEPARTMENT OF HEALTH, EDUCATION, & WELFARE

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BACKGROUND OF THE CONFERENCE

For more than a decade, a few faculty members from medical schools in the Far West met annually at the Asilomar Conference Grounds in Pacific Grove, California. These meetings had always been rather informally structured, but were usually concerned with a topic pertaining to medical education - from admissions policies, practices and problems through post-doctoral and continuing education. Until 1969, these conferences had been combined with the annual meetings of the Western Section of the Association of American Medical Colleges Group on Student Affairs (AAMC-GSA).

In planning the 1969 Western Regional Medical Schools Conference, a decision was made to broaden the spectrum of participants and to alter the program format. The Western GSA had decided to hold its meeting separately - in March - since more time was needed than could conveniently be added to the Western Regional Medical Schools Conference. The GSA also invited medical students and premedical advisers from Western Colleges to obtain a broader representation of experience and opinion - an example followed in planning for this Conference.

The Western GSA agenda for March focused upon problems connected with recruitment of Racial Minority Group representatives into Medicine. Unfortunately, the interesting and sometimes heated discussions were not recorded. Dr. Green's excellent summary of the GSA meeting, which appears elsewhere in these Proceedings, could not recapture the spirit nor the text of the verbal interchanges.

Consequently, participants at this Western Regional Conference included faculty, administrators, and students from several levels of premedical and medical education representing more than 40 institutions of higher learning, and delegates from private and public organizations. An attempt was also made at verbatim coverage of the discussions for eventual publication of the Proceedings.

The interface between pre-medical and medical education was discussed at one of the first meetings of the Western Regional Group. Communication has improved in the past decade, and better penetration has occurred at the interface. Nevertheless, we are still quite distant from the educational continuum between pre-medical and medical education to which so much verbal and written homage is paid. Efforts to increase representation among medical students by members of Racial Minority Groups have highlighted the still quite primitive state of articulation between pre-medical and medical education. Most aspects of medical school admissions policies and procedures - pre-requisites, minimal requirements, identification of meaningful, non-quantifiable characteristics of applicants, definition of the desired end-products, to name a few - have come under sharp scrutiny. The need for improved communication between pre-medical and medical educators has now become urgent.

Changes in medical school curricula occur continuously, and involve increasing numbers of schools. Pre-medical advisers are very hard put to keep abreast of even the few schools within their own regions, let alone the schools elsewhere in the country, and the newly developing schools. Advisers increasingly have to rely upon hearsay, and upon the limited amount of published information, much of which is out of date by the time it reaches them. They are further confused by admissions practices which deviate from established and even from recently published patterns.

Medical school admissions committees and faculties may often be unaware of recent and remarkable curricular changes undertaken by colleges which may greatly affect the preparation of pre-medical students, and may cause unnecessary duplication of course material in medical schools still geared to an obsolete concept of pre-medical education. At the same time, efforts to broaden the socio-economic spectrum from which medical students are drawn demand greater curricular flexibility than has traditionally been the case in medical schools. Better devices to assess an individual student's strengths and weakness are urgently required, and must take cognizance of differential levels of pre-medical preparation.

Both pre-medical advisers and medical school faculties need more and better information about each other, and about newly developing courses of study in their respective institutions. Changing grading policies, and the renewed search for non-quantifiable characteristics among applicants, place a premium upon informed, comprehensive descriptions of applicants by their advisers and teachers. The advisers need more information from the medical schools about the kinds of qualities sought among applicants, and about special opportunities provided for unusual students. The need for better articulation between pre-medical and medical education has become acute.

These were among the considerations prompting the choice of the Conference topic, and for the diversity of participants. The Western Regional Medical Schools provided funds to defray travel and subsistence expenses for some of their faculty members and administrators. In like fashion, several colleges also sent delegates. However, expenses incurred by participants from distant places, representatives from smaller schools, students, and the costs anticipated in connection with preparation and publication of the Proceedings could not be underwritten by the medical schools. The Division of Physician Manpower, Bureau of Health Professions Education and Manpower Training, National Institutes of Health, United States Public Health Service was approached and, through the good offices of Dr. Alan S. Kaplan, Mr. Norman Tucker, and their colleagues, generously provided funds to defray these additional expenses.

Thirteen invited speakers, four panels, and free discussion among almost 90 participants provided many new insights to most participants, and led to the conclusion that many seemingly local concerns were indeed very widespread. Problems which had received very little attention even a few years ago were clearly under intensive examination and exploration by concerned, imaginative faculties in diverse institutions. Nevertheless, no one present could have gained the impression that topic coverage had been complete, or that workable solutions to most of the problems were at hand. If nothing else, the discussions pointed out that many problems would require years and multiple (and, hopefully, critically evaluated) approaches before workable solutions would be forthcoming. At the same time, a welcome sense of immediacy and urgency pervaded the discussions concerned with Racial Minority Group admissions, and with curricular changes at all levels.

A word about the records of the discussions: The comments were recorded on tape, and also taken down by a court stenographer, but the acoustics left much to be desired. The typescript was edited very slightly, and attributable comments sent to participants with the request that originality, natural flavor, and spontaneity be preserved as much as possible, even at the cost of grammatical accuracy. Most agreed to this request and limited their editing to a few corrections and clarifications of terms. In consequence, a rather light style was preserved, and the editor assumes responsibility for those passages which might have caused Messrs. Strunk and White(1) some discomfort.

The editor wishes to express his gratitude to the principal speakers and discussants who needed only the slightest prodding and no threats at all (would they have done any good?) to submit their manuscripts in sufficient time for the final edited manuscript of the Proceedings to be delivered to the sponsoring agency within 7 weeks of the Conference. Staff work by Mrs. Ruth Johnson, Miss Joan Pollock, and Mrs. Sarah Briggs was of the highest order. Mrs. Roma Philbrook, Manager of the Asilomar Conference Grounds, demonstrated again her infinite capacity for patience throughout the preparatory and operational phases of the Conference. Mrs. Margaret Lawrance, court stenographer, slaved indefatigably throughout every moment of the Conference, kept abreast of all speakers - even when they did not announce their names or affiliations - and delivered the 130 pages of typescript within the previously promised two weeks after conclusion of the Conference. The drafts and final version were prepared in record time by Miss Jo Van Elverdinghe. With assistance of such caliber, all blame for errors, omissions, or misunderstandings must clearly be laid at the door of the Conference Chairman and Editor,

Yours truly,

Harold J. Simon, M.D.
La Jolla, California
July 25, 1969

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(1) Strunk, W. Jr., and White, E. B.: The Elements of Style. MacMillan Co., New York, 1959.

RACIAL MINORITY GROUPS IN MEDICAL SCHOOLS

INTRODUCTION

RACIAL MINORITY GROUPS - GREAT POTENTIAL FOR THE HEALTH PROFESSIONS

Clifford Grobstein, Ph.D.

Ladies and Gentlemen:

I'm very happy to have the opportunity to begin this discussion of racial minorities in relation to medical education. I see that the program states that my topic is "Philosophical and Administrative Aspects of Admission, Recruitment, and Progress of Educationally Disadvantaged Students in Medical School." I note that this is to be done in 10 minutes. It crosses my mind that there has been a slight miscalculation of time even to cover the administrative aspects of the topic. I can only attempt an outline of some of the basic assumptions, possibly to raise some issues for later discussion.

The first basic assumption is that it is desirable to increase the number of medical graduates among minority groups, both black and brown, in the general population. To do so we must increase the number of minority students in the medical school population.

The proportion of minority students in current medical school classes is strikingly low. It is estimated we are graduating about 200 students a year in this category in the United States, despite the alarmingly low frequency of minority physicians in the country - about 2.2 per cent of the total physicians in the medical community. These figures are far below the proportion of minority groups in the population as a whole. I think, therefore, that there can be no argument about the desirability of increase of minority representation.

The present under-representation in the student body and in the community of physicians is unhealthy, and it clearly indicates that some strong negative bias is operating against the entry of minority group members into the medical population.

The second assumption I make is that there are in the black and brown populations many suitable candidates for medical training who are not now being reached. In some circles this is a controversial statement to make. I think that it is not in this group, and I won't make any effort to defend it.

Given the two assumptions that we need a wider representation in minority groups in medicine and that suitable candidates for medical schools do exist, two questions follow:

First, what factors militate against the recruitment of a higher proportion of suitable candidates?

Second, what can medical schools and their allies in the other health professions do to reduce the factors acting against minority recruitment? Can we bring to bear positive factors for such recruitment? To the extent that such factors can be suitably manipulated, we should be able to increase the number of minority students in medical schools.

It should be noted that there is a whole gamut of factors which in general tend to inhibit admission into medical schools. For example, because of financial limitations, not all qualified and interested students reach medical schools, regardless of whether they are white, black or brown, male or female. Much has been done through scholarships and loan programs to reduce this inhibition. We know that at the moment an unfortunate retrenchment is occurring, because of the problems of federal budgeting for the loan and scholarship programs. This is particularly damaging to the minority group. The minority population and other underprivileged groups will need massive amounts of financial assistance in order to undertake the expensive course of medical training. All programs designed to stimulate minority recruitment require large amounts of financial assistance, and will come to naught if the financial problem is not solved.

I would like, however, to emphasize two special issues that are involved in minority group recruitment.

The first is a problem. Does an increase in minority representation in medical schools require a change in standards - either admission standards or standards of medical practice?

Second, is it sufficient to alter admission standards to medical schools in order to insure adequate minority representation?

In answer to the first question, the answer can be either positive or negative, depending on the interpretation of the question. Superficially, the answer is affirmative. Increased minority representation does require some change in admission standards. Permeability of the medical schools to minority students must be increased. Admissions requirements must be altered to allow flexibility for special cases. There is growing recognition, however, that the alteration reduction should not imply lowering of the standards of the students' potential but only alteration of the evaluation of his past preparation in relation to that potential.

We are increasingly recognizing that admission of minority groups is inhibited by the nature of admissions tests. This is because education and testing both are culture-bound. Testing is carried on in the communications mode of a predominately white culture. It places minority group students under disadvantage. New tests or standards which take into account social and language differences are sorely needed. It will help also to keep in mind that testing is a tool and not an objective.

The need is not to lower admission standards in relation to qualities necessary for ultimate performance. The need is to transform standards to make them more broadly and effectively applicable to our diverse population.

Selection criteria must be modified but not at the sacrifice of prospective performance levels. The performance level should be the determinant for graduation. Schools cannot lower their graduation standards without lowering the standards of professional and medical care. Lowered standards of medical care are not the objectives for any society and certainly not for the minority groups. Insistence on quality performance, however, does not mean that students cannot alter the length of time - within reason - required for the education necessary to meet the standards.

This raises the second issue, whether altered admission standards are sufficient to meet the minority problem. The answer is clearly negative. Obviously alteration of admission standards will have absolutely no effect if potential candidates are not made aware of the changes. Recruitment efforts and especially pre-medical advising must be made more effective and more comprehensive to insure potential candidates are not lost for lack of awareness. But even this is not the solution. After considerable time and effort has gone into getting minority group members into the medical schools it must be backed by effective training, advising, and total programs within the medical school specifically designed to meet the needs of these students.

Change is needed not only in advising of minority students, but also in curriculum, and this is highly desirable for other reasons. Rationalization of the curriculum is especially important for minority students. Not only is flexibility needed in planning, but in curriculum concept as well. Minority students represent an example of the heterogeneity of background and career objectives in present-day medical populations. This heterogeneity requires comparable flexibility and diversity in curriculum approaches.

Useful to all of medicine, but particularly appropriate to our discussion, is attention to the special problems in the minority communities from which these students come. Turning attention to this will foster closer association of medicine with all ethnic groups, thereby reducing the sense of isolation minority students often feel in a predominately white-valued milieu.

These are some of the problems needing attention in dealing with the admission and education of minority students in medical schools.

I am sure many of you will have much to add. I am looking forward myself to hearing the discussion, and I know it will afford us - and those other fortunate ones who are planning new medical schools - something to work with in helping to solve the problems of increasing minority group representation.

MINORITY GROUP AND DISADVANTAGED STUDENTS
A POTENTIAL SOURCE OF FUTURE PHYSICIANS

Aura Edward Severinghaus, Ph.D.

The profession of medicine is now engaged in what may well be the greatest talent search of the centry - the search for more future physicians. During the last two decades, with the United States enjoying one of the highest doctor-patient ratios in the world (one doctor to every 750 persons) there has been a continuing debate among members of the profession, academicians and the laity on the question, "Do we need more doctors?" Some argued that we do not need more doctors, but a better distribution and utilization of the physician's services to meet the health care needs of the nation. Many leaders in academic medicine, anxious to preserve the high standards of excellence which American medicine enjoyed, pointed out that our schools of medicine could not be expected to admit a significantly larger number of medical students without sacrificing standards. They pressed vigorously for an increase and proper distribution of hospital, clinic and laboratory facilities throughout the nation, and for the development of para-medical personnel to relieve the doctor of duties which he is now required to perform. The distribution of such facilities upon which a sound medical practice could be based, they argued, would bring about the desired distribution of physicians, and move them from the crowded urban areas to the medically neglected small towns and rural communities.

The establishment of adequate facilities which many communities have acquired as the result of the Hill-Burton and other recent legislative measures is now history. Stimulated to match government funds, many localities now enjoy for the first time the comfort, support and the security which comes when you know that a competent physician will be available if you are in need of his services.

But those who insisted from the beginning that there was a dangerous shortage in physician manpower, which would only increase with each passing year, have now been clearly vindicated. Following the Federal and State programs of Medicare and Medicaid, which aimed at making it financially possible for all citizens to purchase needed health services, the shortage of physicians and hospital facilities has been so well dramatized that the issue is no longer debatable.

During the last six years I have been making a study of the discipline of Neurology which included data on the distribution of all general physicians and specialists. The situation in two states which have special interest to this meeting will illustrate what we have just been discussing. Alabama, with a population of 3,500,000 has 2,781 physicians and a doctor-patient ratio of 1:1240. In the population centers (defined by Bureau of the Budget) there are 891,400 people and 1,218 physicians, a physician-patient ratio of 1:731. But the rest of the state has 2,558,500 persons and only 1,563 physicians, a ratio of 1:1635. In Mississippi a similar but more serious situation exists. There are 2,281,600 people cared for by 1,571 doctors. In the only population area, Jackson (Hinds and Rankin counties), its 254,500 citizens have the services of 508 physicians, a doctor-patient ratio of 1:501, while in the rest of the state we find 1,063 doctors serving a population of 2,027,100, largely Negro. The doctor-patient ratio is 1:1906. Since rural physicians can adequately care for a much smaller number of patients than can their colleagues in concentrated urban areas, the physician shortage is intensified. Mississippi has about 40 black physicians, one quarter of whom practice in the Jackson area. When we add up the physician shortages state by state we become aware that the number of additional physicians needed right now far surpasses any reasonable expectation that we can provide them, even if we do have more than 100 medical schools, all of them approaching the limits of expansion. Plans now in progress will do well to increase our annual M.D. graduates from about 9,000 to 12,000 in the next few years.

I propose now to look seriously at the problem we face in the years just ahead when our limited educational facilities must meet the greatly increased demand for admission to our schools of medicine. I would refer you to Resources for Medical Research No. 11, Dec. 1968, National Institute of Health. In this publication, knowledgable experts project the applicant pressure upon the medical schools between 1968 and 1980. The first projection is based upon the experience that medical school admissions follow a relatively inflexible ratio of 4.5 per 100,000 population. This ratio would indicate that between 1968 and 1980 a minimum of 110,000 M.D. degrees will be awarded, representing a modest but insufficient growth of about 20%.

A second projection is based upon a ratio of medical graduates to baccalaureates, a ratio which has run as high as 20 per 1,000 in recent years. This projection takes into consideration (1) the number of new medical schools expected to become operational by 1973, (2) the incentives to expand classes which are inherent in the awards available under the Health Professions Assistance Act, (3) the post World War II population dynamics (the burst of 22 year olds showed an increase from 2.8 million in 1968 to 3.8 million in 1969) which means that in 1973 we can expect 769,000 baccalaureates compared with 631,000 in 1968, (4) a national sampling of college freshmen which indicated that 8% of the men would seek careers in medicine. This projection would expect 145,000 M.D.'s to be graduated in the 1968-1980 period and that the annual output would rise from the current 9,000 to 16,000 by 1980.

A third projection is based upon a ratio of 25 M.D.'s per 1,000 accalaureates, but also assumes a reduction in the attrition rate in medical chools from 12 to 8 per cent. This projection forecasts an increased entering lass of 19,000 (double the present) by 1973. Furthermore, it assumes that the pplicants will be available and that the medical schools will follow recent ronouncements of the AAMC and AMA and attempt to admit all well qualified tudents who apply for admission. (You will recall that the National Advisory mmission pointed out in its 1967 report that, in relation to a much more nservative forecast, the number of available spaces required would be 50% eater than the most optimistic estimates of the 1975 capacity of our schools medicine.)

The per cent increase of Negro baccalaureates is much larger than that r white students, and the pool of acceptable Negro applicants is definitely rising, giving minority recruiters some reason for satisfaction that our efforts are proving productive. But with medical schools facing the projected deluge of well qualified applicants and being without the facilities necessary for them, we have cause for sober reflection and creative thinking to meet the added emergency which recruitment of minority students accentuates.

We return now from these disturbing dilemmas to face something we can be certain of. There is a doctor shortage. Furthermore, the recruitment of future physicians from minority groups is one attack on this problem which has great promise and significance. Those of us who have been working for many years to strengthen and increase the educational opportunity for minority students now find a great personal and professional satisfaction in pressing every effort to tap this potential pool of talent. For more than ten years, through National Medical Fellowships, Inc., and more recently in the Macy program, "Preparation for Medical Education in the Traditionally Negro College", I have kept in touch with Negro teachers, administrators and students. I remember especially how much I learned from two week-long workshops with science teachers from about 40 selected Negro colleges in 1960 at Dillard University and 1962 at Fisk University. The friendships I made there have been rewarding and of great help during the past two years in the Macy program. May we shift our attention then, from the situation in our medical schools and focus it upon the colleges and the Negro students - prospective applicants for admission to medical school.

Estimates of the number of black students who are now in college vary widely, partly because the numbers are increasing very rapidly, but there are between 250,000 and 300,000 enrolled in accredited junior and four year schools. Regrettably, only about 6 per cent of Negro high school graduates seek additional formal education, and the loss of medical school talent in the other 94 per cent is deplorable.

A recent survey now almost completed, indicates that slightly more than 860 Negroes are registered in our medical schools. Of these, quite significantly, 280 are in the first year. Of the total enrollment, 330 are in the so-called white medical schools, while Howard and Meharry have 530 in their schools. Although the number falls far short of the 11 per cent of Negroes in our population, white schools now have more than twice the 164 black students who were in their medical schools in 1962.

This creditable progress has resulted from recruiting programs in the schools of medicine, almost without exception, involving students, faculty, and administrators; in programs such as ISSP, and the Thirteen Colleges Program, and through efforts of the National Medical Association. A very considerable amount of credit must go to the Macy Foundation which launched its multi-pronged program, "Negroes for Medicine" in 1967, and moved rapidly ahead in three simultaneous efforts. The first was to add a special search for medical school talent to Dr. Cadbury's already established Post-Baccalaureate Program. Potentially talented senior students who have not completed pre-medical requirements are recruited in the Negro colleges, brought to Haverford College for a summer session, which is followed by a full year's residence in a selected liberal arts college, where the student's studies are tailored to his individual needs and interests. Twelve such Post-Baccalaureates have now finished their first year of medical school and 20 more are expected to enter in the fall of 1969.

The second area of Macy activity has been the encouragement and support of pioneer minority recruiting programs in more than a score of selected medical schools. Here in cooperation with liberal arts colleges, and sometimes independently, the medical schools have reached back into high schools with the hopes of discovering talent at an early stage of education, and maintaining the students' interest in medicine through college until he applies for admission to medical school.

A third Macy program has been the organization and sponsoring of five national conferences to give wide publicity to the opportunities which black students have in "Preparation for Medical Education in the Traditionally Negro College". More than sixty per cent of the black students in college are registered in the traditionally Negro colleges of our southern and border states. Until 1930, four of these colleges, Fisk, Howard, Lincoln, and Morehouse, had graduated 70 per cent of the nation's Negro physicians. Even today these four colleges continue to furnish 20% of all Negro medical students.

Two of the conferences, Ft. Lauderdale, June, 1967, and Atlanta, February, 1968, were specifically designed to promote meaningful dialogue among representatives of Negro higher education, the medical schools, the profession of medicine and foundations and government agencies. They focused attention upon the identification, guidance, recruitment, curriculum, and pre- and post-baccalaureate supportive education as they relate to the recruitment of more Negroes for careers in the broad area of medical affairs.

Two conferences, Ft. Lauderdale, June, 1968, and Dallas, March, 1969, brought teachers, advisors, and administrators from Negro colleges into workshops with admission officers of medical schools by geographic areas. Here in an intimate manner they discussed the problems of medical school admission from the stand point of the professional school and the college. Once more the discussions centered upon guidance, curricular content, recommendations, interviews, etc. The medical schools gained confidence in their sources of information and the colleges in the manner in which their information was evaluated.

These conferences served as an introduction or springboard for proposed visits to the Negro college campuses upon invitation of the participating schools in much the same manner that Drs Carman, Cadbury, and Severinghaus responded to invitations from the 115 colleges who participated in the national surveys of 1948 and 1958, "Preparation for Medical Education in the Liberal Arts College" and "Preparation for Medical Education, a Restudy", respectively. We believe that the Macy Foundation efforts of the last two years, which are continuing apace, have been most productive and rewarding. The Association of American Medical Colleges was invited to co-sponsor these Macy Conferences, and the program for recruiting minority group and disadvantaged students for medicine which has since developed in the Association, now under the active leadership of the G.S.A. Minority Student Committee, can be expected to make significant contributions.

Permit me to cite three sign posts of progress. (1) The thirty-two southern and border state medical schools which were represented in the Macy Conferences now have a total of 89 black students in residence. Of these, 39 are in the first year class, as contrasted with 16 in the fourth year. Four years ago many of these schools had no Negro students. (2) National Medical Fellowships, Inc., has through the years been receiving requests for scholarship assistance from almost every Negro student who had been accepted to an integrated medical school. In 1967 it received 142 applications, the largest number ever to apply up to that time. In 1968 it received 191 applications. This year (May, 1969) the number of accepted black applicants had risen to 370. We hope that the emergency efforts to raise the additional $300,000 necessary for N.M.F. to meet this unexpected upsurge of applications for scholarship assistance will be successful. (3) During the four years 1964-67 inclusive, 484 black students took the Medical College Admission Tests. In this year alone more than 650 took the examinations. In all three of these cited examples we can expect the number of Negroes will be significantly greater next year.

I wish now to direct our attention briefly to the four most important areas of the recruitment process. These are (1) the identification of talent as early as possible in the liberal arts college, or better still, in the high school; (2) the importance of wise advising or counseling by knowledgable teachers; (3) thoughtful planning of the curricular program; (4) guidance in the process of making applications to the medical schools for admission.

In the volume, "Preparation for Medical Education in the Liberal Arts College" each of these areas occupied a full chapter. In this paper such treatment is impossible, but I should like to single out in each area one or two significant facts.

(1) IDENTIFICATION OF TALENT. Not only do we fail to discover and encourage individuals qualified for the study of medicine, but many pre-college students who make inquiry are actually discouraged at the high school level. Programs of recruitment have repeatedly revealed incidents in which guidance counselors have arbitrarily "turned students off" because they assume the inquiring student is not qualified either financially or academically for the arduous requirements of medical school education. Much can and needs to be done to correct the false impressions which are passed from career counselors to interested students at this level of education. Many liberal arts colleges have now established programs which reach the secondary school students and their advisors.

(2) COLLEGE ADVISORS. If you have been successful in bringing competent and initially motivated students into the liberal arts college, you must continue to demonstrate a personal interest in them and offer advice and assistance whenever it is sought. This requires an advisor who knows both the college and the student intimately and is eager to take the time and make himself available to the student for consultation. Such advisors are always discovered by students and kept busy.

(3) CURRICULUM. There should be no so-called "premedical" curriculum into which all medically oriented students are rigidly herded. The science courses prerequisite for medical school are of course essential and should, perhaps, be included in every good liberal arts program. But the college should adapt its educational program to the individual student, considering his previous achievement, his personal needs and interests in light of what the college has to offer. Above all the college should recognize that its responsibility is not to provide an education for admission to a graduate school program but to prepare its graduates for the enjoyment of a good life and responsible citizenship.

(4) MEDICAL SCHOOL ADMISSION. Premedical advisors must know the admission officers of medical schools. When they do, they will realize that it is essential to match applicants to appropriate medical colleges. The fact that they all meet the standardised requirements of quality and excellence, does not mean that the schools are all alike. They are not. Well qualified students will thrive in one academic environment and struggle to survive in another. Cooperative effort between the college and medical school directed toward appropriate placement can do much to help each student reach his full potential.(3)

Any person engaged in bringing more minority and disadvantaged students into medical school soon discovers that even when talented and motivated students are available, there are at least two major hurdles to be cleared: The first is available funds to finance the student; the second is the severe competition which has developed in the recruiting process. Assuming that we are able to find sufficient numbers of qualified applicants, we still face a severe financial problem in providing the necessary funds to support these students in medical school. The majority of black students come from financially disadvantaged backgrounds. In many instances their families have already sacrificed and gone further into debt to permit their sons or daughters to complete their college education. Even when full financial support in medical school is offered to a black medical applicant, he not infrequently feels morally obligated to accept, instead, a position in which he can begin to earn money to relieve the hardships at home. Only 30 per cent of white students, but 78 per cent of black students come from homes where the income is less than $8,000. Twenty-nine per cent of our Negro medical students come from families with less than $4,000 income, another 26 per cent earn between $4,000 and $5,000 and 23 per cent have incomes between $5,000 and $8,000. Relatively few Negro medical school students are self-supporting. (Communication from President Herman Branson)

The second hurdle is related to the first. The competition which medicine faces in seeking qualified Negro college graduates has become unbelievably great. These competitors can offer the college graduate immediate financial security. In my Negro college visits this year I have met the attractive and able recruiters from industry, business, and government on every campus. Not infrequently they are returning alumni who have obviously made good! They speak with authority, and can offer a prospective recruit a salary of at least $8,000 for each of the first two years in training, and then a starting annual income of $15,000. How can on expect even a medically well motivated youngster from an impoverished background to resist such offers when medicine offers him in contrast the prospect of at least 6 years of graduate education during which he must go further into debt? Moreover, medical schools are finding the competition of other professional schools and the graduate school Ph.D. programs very keen indeed.

One cannot escape the impression that the recruitment pool in the traditionally Negro college is well stocked with talented students, but it is being over-fished. In attempting to evaluate the impact of medical schools and other competitive recruitment, it is clear that scheduled student job-interviews have become a major disruptive activity for senior students, especially the abler ones. Many schools, which still keep records of recruiters on the campus, indicate that the numbers now run into the hundreds. Others have replied that business and industry now send so many that the school no longer attempts to keep track of them. Even though medical school recruitment has been modest by comparison, some colleges, which earlier welcomed such activity, no longer appreciate it.

Yet, I see positive values resulting from all this recruiting activity. If one of the major objectives of the Macy program is to bring medical school admission officers and Negro college advisors and administration together so that they may become acquainted with each other and aware of the problems which each faces in the admission process, we now see it accomplished. We couraged an exchange of visits between medical school and college personnel, cluding students. The admission process, I repeat, succeeds only when the professional school understands the sources of its information and has confidence in the manner in which that information is being evaluated.

When one realizes the low attrition in the schools of medicine and learns that successful completion by students in course is expected by experts to increase from 88 per cent of admissions to 92 per cent of admission, there must be general agreement that the admission procedures have been most successful. The sources of information, academic record, letters of recommendation from the college, the Medical College Admission test and personal interview, when properly combined, have justified confidence in their effectiveness.

Nevertheless, there is also quite general agreement that the Medical College Admission Test does not properly measure potential when administered to minority group students. It is all the more unfair to these students because the medical schools, with meagre information concerning Negro college curricula, teachers, premedical advisors, if there are any, and not knowing how to evaluate the academic record, place greater reliance on the MCAT score in minority admissions than in the admission of other students. Certainly minority group students can not be expected to compete favorably in tests designed to measure vocabulary and general information, if these tests are based upon a white middle class cultural background. Even those sections of the examination which deal with scientific knowledge and quantitative ability reflect inadequate verbal ability both in understanding the questions and formulating the answers. The development of new examinations which will more curately measure potential, the ability or capacity to learn, rather than past opportunities of minority students to learn, has been widely recommended.

I do not wish to discuss the MCAT examination further. But an unsatisfactory experience with an examination does not lessen the importance of standards by which we measure progress and achievement. I have been disturbed in many recent conferences, workshops, and personal conversations by statements which imply a willingness or even a hope to avoid facing up to standards. I repeat that our experience with a poor testing device should not lead to the abolition of examinations but to the development of better tests to replace the poor ones. Whether we like it or not, we all must face up to standards which we do not make for ourselves. They are always made for us. They are not to be regarded as road blocks but as sign posts toward a goal which we are seeking. We should welcome them.

Let me illustrate. I recently had the opportunity to talk with a distinguished professor, emeritus of physics who has now become one of the world's best authorities in archery. His contributions to the design of bows and arrows and the improvement of the technique by which the arrow is directed in flight have been many. It is not a coincidence that his daughter and granddaughter are national and international champions in archery nor that his grand daughter has shot the highest score ever attained in competition. If you want to be an archer, you may complain about the equipment or the teacher's methods, and blame them for your slow progress during many, many practice sessions, but you can't avoid looking the standard right in the bull's eye every time you draw a bow. The bull's eye is the standard setter which measures your personal and competitive achievement as an archer.

Here in Monterey we cannot avoid thinking golf, at least I can't. If you choose to play golf, you can argue about the necessity of keeping your head down when you swing, or keeping it fixed as you rotate your body, or keeping a straight left arm, a proper grip, or shifting your weight from one foot to the other at the proper time. You may even decide that this is all nonsense, or that you could design a better set of clubs yourself. But in the end there is no way to avoid the standards of golf or of being tested by them if you play. You haven't made these standards. How far and how straight can you hit the ball, and how well can you estimate the distance and control the power which the club head delivers to the ball? If you make no mistakes you can play the course in "par", as many men before you have demonstrated. Par, or better, is your standard and your goal, and every time you hit the ball you are aware of it.

Now you face the same situation if you decide to be a doctor. If you will permit me to simplify a very complex situation, sooner or later you will meet your standard and testing face to face. It is the sick patient who looks to you for help. You are now being measured by what you can do, and many times by how quickly you can do it. If the patient is able to communicate, how good a history can you take, how good is your physical examination? It becomes your examination as well as the patient's. What help do you need from the laboratory in making a differential diagnosis? What advice and orders do you give the patient and what do you prescribe to counteract his discomfort and disease? For many years physicians before you have measured up to and set the standards by which you are now being tested, and the world wide respect which American medicine enjoys indicates that the standards are high. Each time we revise the curriculum or argue whether calculus or so much biochemistry is necessary, or whether humanities deserve a place in the educational program of a doctor, we may be right or wrong, but the truth and final answers lie in the future, when physicians are face to face with standards. The quality of their achievement will determine whether our standards are rising or falling, for even our standards face competition and constant judgment, and are subject to revision.

I wish finally to discuss in broad general terms the educational background which I feel a physician should have. Regardless of his curriculum or course content I would suggest four basic ingredients which his education should contain. These have been set forth in earlier publications and deserve restating:(2, 3) (1) "Training in the accurate and felicitous use of language, as the essential condition of all reflection, self expression, and communication with others."

Doctors spend most of their time communicating with others either in professional conversation, or reading what others have written, or writing what they hope others will read. We may object seriously to the verbal ability test on the MCAT and rightfully depreciate at times its use in admission procedures, but verbal ability cannot be ignored or depreciated and must be acquired by the aspiring physician, if he hopes to succeed.

(2) "Training in the acquisition of factual knowledge of ourselves, our society and other societies, the physical world and ultimate reality so far as it is humanly knowable." One sees here the implications for a broad liberal education.

(3) "Training in mature and responsible evaluation and decision in the controversial areas of science, social policy, morality." A physician is not only obliged to communicate successfully but is constantly required to evaluate evidence and situations and make prompt decisions.

(4) "Training in synoptic comprehension, i.e. in the escape from multiple provincialisms which bedevil mankind and in the attainment of larger and more inclusive perspectives."

In choosing to enlarge briefly upon the importance of these ingredients, I do so because I feel they are especially essential to the professional education of disadvantaged minority students. The situations in which they find themselves today should have been prevented ages ago. Nevertheless, they are real, and any educational program which we now develop as the result of a sudden rational and moral awakening cannot escape taking on the characteristics of an emergency action. Emergencies spawn expediency and substitute short term for long term values. So we must be on our guard. I have this in mind now as I contend that never has the importance of a broad liberal education been more necessary in preparing students for the study of medicine.

In a recent workshop I heard a brilliant young black physicist say in effect, "No more of this humanities stuff. Even if we were not in a state of crisis in which we require all the time available to give these applicants as much science as they need to be adequate physicians, I have come to regard the time spent on the humanities as wasted. It's an attempt to put a white cultural plaster on a black boy. He does not need it, and he does not want it."

I asked for a few minutes to reply to this statement, and I would share with you the defense of the humanities which I made at that time.

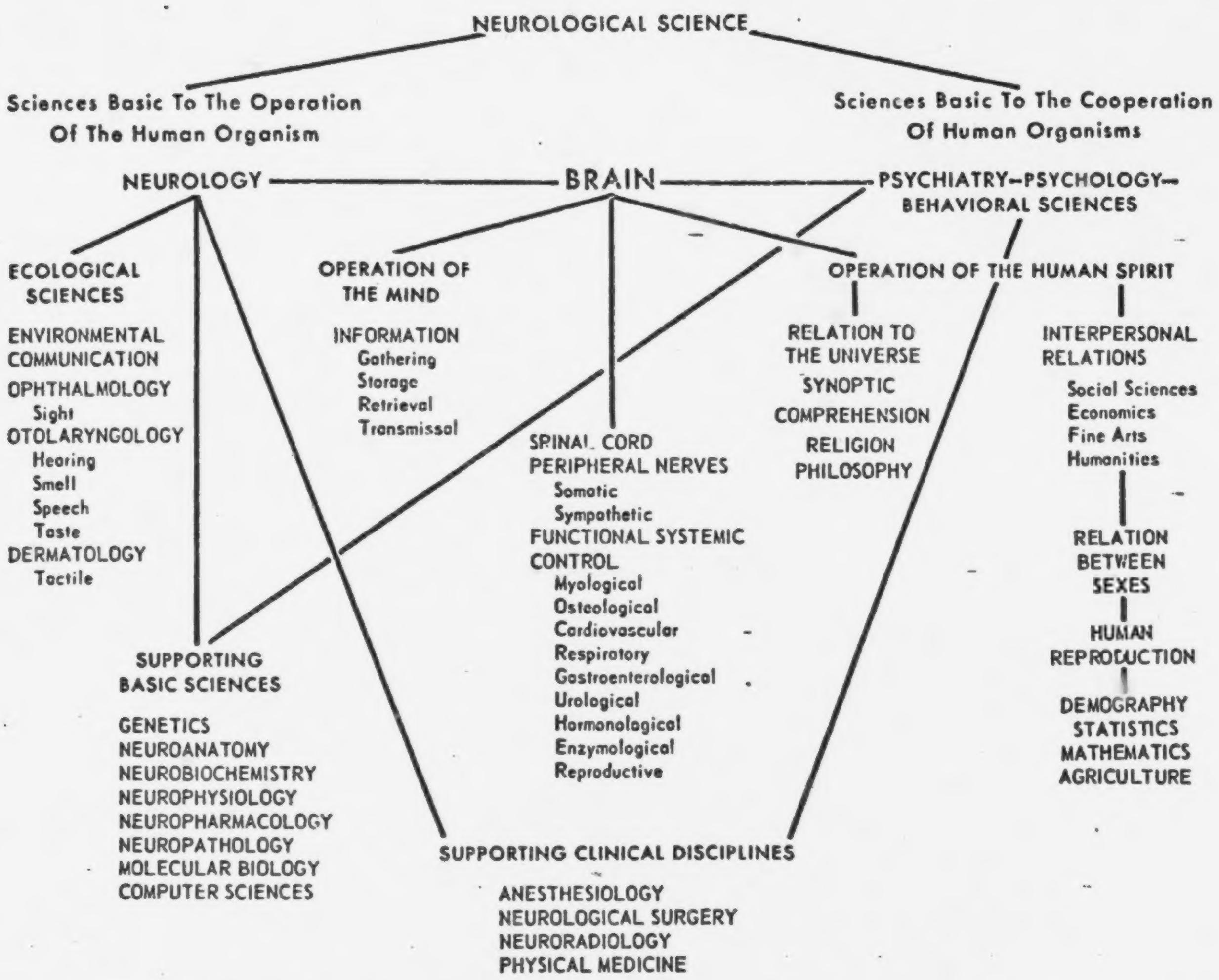
"Know thyself", said Cervantes, "which is the most necessary and difficult task of your life." It is in the humanities that you relate yourself to the lives and problems of other people. Whether the characters pass before you in review in literature, history, philosophy, religion, or the fine arts, you ask yourself, as you become acquainted with their lives and activities, what would I have done had I been the person involved. In so doing, you are looking at yourself and becoming better acquainted with that person and his sense of values.

The humanities succeed as disciplines only in so far as they involve the students in the subject matter. If taught without providing the student with an opportunity and incentive for self involvement, they accomplish little. The more restricted and disadvantaged the student's background, the more necessary it is to select subject matter in which he can and will become personally involved. Much of my enthusiasm for the widespread interest in Black Studies programs stems from the hope that they will have a revitalizing impact upon the teaching of the humanities, especially in the traditionally Negro colleges.

But my defense of the humanities in the scientifically oriented program o educating the modern physician is based upon a second and quite different approach. I may startle you when I say that the humanities are science; sound biological science. In short, biology deals with the structure and function of living organisms and their living relationship to other organisms, and the environment. The humanities teach human ecology. It is only in recent years while making an intensive study of the discipline of neurology that I realized all education being man centered, is brain centered. There are but two natural disciplines: the discipline of the mind and the discipline of the human spirit. The brain is closely related to and, in a sense, controls the structure and function of the human body, the operational aspects of the organism. But being also the seat of the human spirit it is responsible for the cooperational activities of the human organism with other human beings and the environment. (See Figure 1.) The physician, as a human biologist, soon discovers that a scientific knowledge of the structure and function of the body is not adequate to explain the deviation from normal function which we call disease. Invariably ecological factors are involved. Distrubances of the human spirit produce and augment malfunctioning of the body. The physician who is not prepared to recognize these factors is inadequately trained. His scientific training in the humanities might have rounded out his education.

Finally may I point out that we are interested in bringing more minority group students into medicine because we need more doctors and because we support their rights to seek careers in the professions.

We must go still farther, however, and include the rights of all minority ples, whether they are in congested and concentrated urban areas or in wide open rural areas, to receive adequate medical care and enjoy good health. This


NEUROLOGICAL SCIENCE
Sciences Basic To The Operation Of The Human Organism
Sciences Basic To The Cooperation Of Human Organisms
NEUROLOGY
BRAIN
PSYCHIATRY—PSYCHOLOGY—BEHAVIORAL SCIENCES
ECOLOGICAL SCIENCES
ENVIRONMENTAL COMMUNICATION
OPHTHALMOLOGY
Sight
OTOLARYNGOLOGY
Hearing
Smell
Speech
Taste
DERMATOLOGY
Tactile
OPERATION OF THE MIND
INFORMATION
Gathering
Storage
Retrieval
Transmissal
SPINAL CORD
PERIPHERAL NERVES
Somatic
Sympathetic
FUNCTIONAL SYSTEMIC CONTROL
Myological
Osteological
Cardiovascular
Respiratory
Gastroenterological
Urological
Hormonological
Enzymological
Reproductive
OPERATION OF THE HUMAN SPIRIT
RELATION TO THE UNIVERSE
SYNOPTIC COMPREHENSION
RELIGION
PHILOSOPHY
INTERPERSONAL RELATIONS
Social Sciences
Economics
Fine Arts
Humanities
RELATION BETWEEN SEXES
HUMAN REPRODUCTION
DEMOGRAPHY
STATISTICS
MATHEMATICS
AGRICULTURE
SUPPORTING BASIC SCIENCES
GENETICS
NEUROANATOMY
NEUROBIOCHEMISTRY
NEUROPHYSIOLOGY
NEUROPHARMACOLOGY
NEUROPATHOLOGY
MOLECULAR BIOLOGY
COMPUTER SCIENCES
SUPPORTING CLINICAL DISCIPLINES
ANESTHESIOLOGY
NEUROLOGICAL SURGERY
NEURORADIOLOGY
PHYSICAL MEDICINE

Plan for the study of the structure and functioning of the human organisms.

Figure 1. Plan for the study of the structure and functioning of the human organisms.

is our ultimate goal in medicine. Although we would not imply any special responsibility of the Negro physicians to bring health care to the black populations so desperately in need, we would hope that many black doctors would have, or develop, a sense of mission to help in this important and necessary medical undertaking. One needs only to compare the health records of black and white people in our largest cities to realize how urgent the task is.

Visiting these areas and listening to the advice which comes from the experts now engaged in the delivery of medical care to individuals and to the community will convince anyone that the assignment is complex and difficult. The physicians whom we prepare for this task must be not only scientifically well trained, but prepared to function as humanitarians, social scientists, and as community leaders. To succeed, they must be able human ecologists. I quote from a letter of an experienced physician working in a disadvantaged urban area.

"To the disadvantaged, with very little to live for, health care has no real priority even when it is accessible and available. People come to you only when it really hurts. There is no notion of a personal physician, or of preventive care. It is emergency type care - conditioned by distrust of professionals after long years of 'bartering their dignity for their health' in the medical ghettos. I learned that health care must be designed to function as a force for change..it must heal families as well as individuals. As I see it the medical profession is among the disciplines challenged to adapt its skills to the necessary task of socialization for collective competence needed to reverse the destruction of the family ties and to strengthening the larger family, the community. We cannot effectively practice our own profession without becoming part of a much broader apparatus that is both supportive of our professional goals and also working to strengthen the community as a social organism. Unless it changes drastically, traditional medicine, as practices, taught and administered, cannot offer leadership in the task of healing a sick society."

I can only add that even the broad liberally educated physician with a thorough grounding in scientific medicine, a strong social conscience, a motivating sense of moral values which holds high the dignity of the human spirit, will find himself challenged to the full. What could be more important for our nation today than to have large numbers of black and other minority group or disadvantaged students discover this challenge and dedicate their lives to meet it?

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The Southeast: A National Source of Minority Students for Medical Education

Paul R. Elliott, Ph.D.

There exist some basic, factual data on which any program to increase minority enrollment (in the case of this paper, black enrollment) in medical schools must rest. These severe, brutal facts are worthy of reiteration.

> "The Negro baby born in America today - regardless of the section or state in which he is born - has about one-half as much chance of completing high school as a white baby born in the same state on the same day; one-third as much chance of completing college; one-third as much chance of becoming a professional man; twice as much chance of becoming unemployed; about one-seventh as much chance of earning $10,000 per year; a life expectancy which is 7 years less; and the prospects of earning only half as much."[1]

Further, although Negroes constitute 11.4 percent of the population in this country, only 2.2 percent of the nation's physicians are black. From 1940 to 1960, the increase in the black population was 46.7 percent while the increase in black physicians was only 14.2%. This is an old story, repeated often - but never often enough in the past ten years. It rather strongly suggests that the American educational system - and in particular, medical education, has a severe fault line which is widening rather than narrowing with time. We are engaged in a compensatory race with social, educational and political institutions in which each year lost is more critical than the last, as the deficit increases around us.

There are two problems which are simply stated: (1) How do we orient, recruit, and gain admission for the maximum number of black students in our medical schools this year and in the near future; and (2) how do we increase the number of black students committed to and moving towards the medical profession in the future? A companion problem to the above can be stated: given the very limited financial resources of private, state and federal support in this area, where can we best concentrate our efforts to enhance these goals?

It is the thesis of this paper that one major area of concentration should be in the geographic section described as the Southeastern United States. There are approximately 300,000 black students enrolled in higher education in this country, and 50% of these are enrolled in predominantly black colleges.[2] Of the 78 predominantly black colleges awarding baccalaureate degrees, 57 are in the Southeastern states of Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North and South Carolina, Tennessee, Virginia, and West Virginia. Seventeen more are in bordering states of Texas, Arkansas, Oklahoma, Missouri, Maryland, and the District of Columbia. The remaining four are in Delaware, Ohio, and Pennsylvania.[3]

Seventy percent of the students enrolled in these predominantly black colleges received their early education in the Southeast and 90% in the Southeast plus the Southwestern states.[3] Clearly, if we are to effect significant change in the representation of black students in medical education, a remarkable national resource and national target is available in this Southern region.

If we look first at the goal of immediate recruitment, we should first describe the students themselves if we are to understand the problems involved. From the extensive survey of the 1964 graduating class of the predominantly Negro colleges[3], we can obtain a profile of these students.

1. The students have significant financial problems. The ten states with the highest concentration of black population are the ten southern states with the lowest per capita income. Sixty-four percent of these PNC college graduates come from families with an income of less than $5,000 per year, and over 90% from families earning less than $10,000 per year. Two thirds of these graduates have a significant debt upon graduation. Eighty-one percent said that financial reasons played a significant role in determining whether they entered graduate or professional school.

   More specifically, 71% of the male PNC graduates who were interested in medicine and did not enter that career, listed financial resources as the major reason. Only 17% felt they did not have the talent. Stated another way, 56% of all graduates interested in medicine felt that preparation for the career would take more time and money than they could afford. What is often overlooked in recruitment for medical applicants is that a five to ten year delay in obtaining a reasonable income may be more than just a financial problem. For a student raised in poverty, the immediate offer of an industrial job for example, must have significant psychological effects which would make his choice of medical education a difficult one.

2. The limited educational background prior to college has significant effects on their choice of careers. Only 12% of these graduates were from families where both parents attended college. Even if these students had adequate secondary schooling,

they would still be handicapped by their earlier, extra-school, familial environment. Many findings show quite clearly that the childhood disadvantages tend to be reinforced and perpetuated by inadequate high school experiences. It should be remembered that most of the present graduates of predominantly Negro colleges attended segregated primary and secondary schools. Any comment here on the inadequacy of Southern, segregated, early education would be absurdly redundant. (See, for example, reference 4). It should be emphasized that the black colleges in the Southeast may be doing the most significant job of all colleges if we define education as the change in knowledge, ability, and understanding of a student over a given period of time. Considering the input and output, North Carolina College in Durham, for example, certainly does more for its students than does Duke University, in the same city. In any regard, we need to recognize the educational background of the black graduate as part of the profile.

3. The profile includes very high motivation and self-confidence in the student's career choice and his ability to carry out that career choice.

More black graduates (54%) feel they have the ability for a career in medicine than do white graduates (44%). More importantly, of those black graduates who have selected medicine as a career (6%), only 17% felt they did not have the talent. In particular, female black graduates have more self-confidence than their white counterparts. Forty-three percent of all female black graduates felt they had the ability for medicine, but only 30% of the white female graduates were so inclined.

4. Finally, the role image of medicine as a profession is not strong. Less than 6% of entering college students in predominantly black colleges considered a career in medicine (1961) and 50% of those lost interest before graduation. Only 1/4 of all entering black students said they would find medicine an interesting career, as compared to almost 50% of the white students entering college in the same year. Some obvious factors are length of education, finances, and the student's view of the openness of the profession, but the role image must be important also. In a separate survey (Elliott, unpublished) the five most frequent reasons given for medicine as a career choice by white students are:

a. close relative in the medical profession
b. physician as close friend of the family
c. family pressure or support
d. personal experience (e.g. stay in the hospital)
e. counselor or teacher advised him to enter medicine.

In three of these (a, b, d) the student encountered a role image they could seek to emulate. In one (e) they enjoyed appropriate counseling and in the last (c) they enjoyed familial encouragement. By and large, black students do not encounter these sameadvantages.

Within this profile then, we are recruiting a small number of students ..th significant financial problems, high motivation and self-confidence, and possible educational deficiencies. Presumably, with proper financial support, educational support where (and only if) necessary, and a significant opening of positions in the nation's medical schools we should have no difficulty recruiting and admitting the few students so oriented. In fact, such procedures will even change the orientation of some students who would have chosen other careers. But there are still some problems even at the level of recruitment.

1. First, we are talking about financial support in a year when the proposed Federal budget shows the Health Professions Act loans and scholarships cut by as much as 40%. If this comes to pass* it will be doubly tragic, since the entering class of 1969 in our medical schools contains a significant increase in minority and disadvantaged students the same students who most need financial support. Medicine, with President Nixon's help, may still remain the profession of the upper middle class white.

2. There are still many medical schools who say they are recruiting minority students, but who in fact define the "qualified" black student in white terminology and who do not in any way alter their curriculum, counseling, admissions policies or financial aid in order to help solve a problem which they themselves created; the extreme lack of minority physicians. The simple result is that a few black students are accepted at every medical school to which they apply, and the medical dean or admissions officer pats himself on the back for a job well done. This game is both inadequate and inappropriate, but in the long run must wait for outside pressures to force any changes in such myopic reticence.

3. Probably most significant is the fact that, as Melvin Cole has stated[5], recruitment programs are aimed at the black college at a time when only 6 percent of black high school graduates enter college. In essence, the medical schools are competing for a constant pool of "acceptable" students, resulting in a redistribution of a few students over a large number of institutions.

By this means we will never achieve the needed, drastic increase in black physicians and health personnel.

Eighty-six percent of those black graduates who chose a career in medicine in 1964 had done so when they were freshmen in college.[3] To quote Mr. Cole again[5]; "The health science schools can best increase the numbers of black health science students...by instituting programs at least at the high school level so that they may rescue potential black health professionals from a demise in high school."

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*. has now come to pass - Ed.

If the Southeast is indeed a national resource for black students entering the health professions, then the nation's resources must once again be differentially directed towards that region. The following are areas of obvious importance which should receive top priority.

First, and simplest, to receive maximum benefit from those black graduates of predominantly black colleges who have selected medicine as a career; and to avoid the costly duplication of multiple recruitment of black students which now occurs in these colleges, the medical schools themselves need to initiate a recruitment, information, and interview center in the Southeast. The goal of this center would be to place as many black students as possible in the medical school most appropriate to the educational goals of the student. We should begin to worry more about the significance of the national problem and less about the image of our individual medical schools, until such time as there are sufficient minority applicants to achieve our long range goals. If each of the medical schools which recruited in the Southeast donated those monies used for recruitment, and if the other medical schools supported the venture to the level of their interest in the problem (which might furnish some interesting outside pressure), we could easily set up and staff such a center with professional counselors and interviewers, and have sufficient funds remaining to defray the cost of the students' (single) interview trip to the center.

The estimated cost of a regional recruitment, interview, and informat[illegible] center would be as follows:

Staff recruiter	$15,000	per annum
Staff interviewer-counselor	15,000	
Assistant recruiter and information officer	10,000	
Secretary-Administrative Assistant	6,500	
Typist	3,500	
	$50,000	- Personnel
Supplies, postage, et. al.	5,000	
Rent for office, utilities	6,000	
	$11,000	- Overhead
Interview trips for 500 students @ $200.00	$10,000	- Interviews
TOTAL	$71,000	

If we were to set up five such interview centers in (for example) Atlanta, New York, Chicago, Denver, and San Francisco, the total cost would be $355,000 per year. That averages out to $3,550.00 per medical school pe[illegible]ear; an incredibly small sum of money if the medical schools are actually concerned with an increase in minority group and disadvantaged students in medical education.

Second, and more difficult, is the financial, social, psychological, political, and any other type of support we can muster for the traditional black colleges. As is stated in the pamphlet, "Black Consciousness and Higher Education"[2]: "Negro higher education has not participated in the large increases in expenditures for higher education that have been made by government...Those institutions which have received the most serve black students the least. Universities should be checked on Civil Rights Act compliance, not on their intentions but on their achievements in serving black students. The same requirements should be added in terms of their serving the poor generally." So far, integration has meant a decline in the Negro's participation in higher education. Integration is no bargain when you keep coming out the loser.

The greatest geographic need for higher education is in the South. The greatest higher education need for black students is in the South. There is no possible justification in further avoiding the responsibility of support - massive, direct social and financial support for the traditionally black colleges.

Finally, and most difficult, because the models are few, the financial support is scarce, and the results are in the future, we must initiate ambitious and comprehensive projects to upgrade the educational opportunities for black and other minority students at levels below the college. We can no longer afford to be complacent when only 6% of black high school graduates can attend college; no matter what the reasons. Nor can we achieve our goal of appropriate representation for minority groups in the medical profession if we wait for someone else to alter that percentage. Changes in curriculum or admissions, compensatory programs, recruitment, changes in attitude, changes in health care delivery systems; all are temporary, short range, and essentially meaningless unless we attack the problem where it actually exists - at the educational opportunity for minority students in any ghetto whether it be the South or in the cities of the North.

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Report on Western Group on Student Affairs Conference: Increasing Minority Student Representation in Medical Schools

Gerald Allen Green, Ph.D.

At the end of last March here at Asilomar the Western Region of the Group for Student Affairs of the Association of American Medical Colleges held its annual meeting. This year the Group for Student Affairs carried out its long-planned intention to involve in this meeting premedical advisors from those colleges in the West that supply the majority of our applicants. The subject of this Conference was "Increasing Representation in the Medical Schools of Afro-Americans, Mexican-Americans, and American Indians." Students from several of the member schools of the Group for Student Affairs were also able to participate in the Conference, and their contributions were stimulating and fruitful.

Perhaps because of the regional nature of the Conference, and certainly because of increasing experience of local recruiting efforts, it seemed easy to reach a consensus that large numbers of potentially able students in the local minority populations have not in the past received adequate encouragement to apply to Western medical schools and have not received, as well, sufficiently detailed review of their candidacy when they have applied. e rationale for reaching beyond their own local minority communities in some nationwide competition for able minority students came into question. Historically, there is no question that the number of minority students to whose credentials one cannot take exception has been distressingly low. Even though many schools in the West conceive of themselves as competing on a nationwide basis for their student bodies, there seemed substantial agreement that insufficient efforts have been made to address ourselves to our local minority communities.

The problem involves communication and, in a specific sense, recruitment. The efforts of many individual schools at recruitment among the minority communities were described. There seems little doubt that the resentment in the minority communites of the "negative counselling" - that is, counselling minority students away from professional aspirations - is justified and is based on accurate information. As medical schools increase their efforts at relating to the communities in which they exist, there is a concomitant attempt to encourage local young people to relate themselves to the health professions. This most commonly takes the form of encouraging students to visit at medical schools and to accept part-time and/or summer employment as helpers in the medical school setting. No one doubts that these efforts are insufficient. More extensive and more creative ways must be found to communicate with potential medical students at the junior high and high school levels. Present efforts to increase the number of minority students accepted from the college students presently applying to medical schools must continue and must increase, but the direction toward a goal of a career in health must be present more in younger students to enable them to survive the discouragement that they so frequently find on every hand. Probably the aspect of these students' lives most refractory such encouragement from medical schools is the failure of the student's own family to support his aspirations. The great amount of poverty from which these minority communities suffer makes the lack of parental encouragement of their children toward professional careers understandable. We in the medical schools must not ignore the added impediment that this implies in our attempts to communicate with students, nor can we ignore the strengths in such families that the students must continue to draw from.

Many of the premedical advisors who participated in this Conference are interested in sharing the responsibility of communicating with the students whom we are seeking. In many respects, they are likely to be more effective communicators than are we in the medical schools. Clearly, a combined effort will be advantageious to the students and to the medical schools.

Much agreement was voiced at the March Conference that medical students who themselves come from minority communities are the most effective communicators with students at earlier levels in the educational process. One of the reasons why we in the medical schools must achieve a level of ethnic minority representation that is more than tokenism is precisely related to the notion that a "critical mass" of ethnic minorities in medical education is necessary to encourage increasingly able academic performance in health related areas by students from the minority communities. To be sure, the performance in medical school by a minority student is most likely to be enhanced by relieving his social isolation in an overwhelmingly "white school." But it seems likely that the longer lasting effect will be the one of providing visibility to younger students of the realistic nature of their aspirations toward a health career.

Probably because the number of minority applicants is still so small among the predominantly white schools, there has in the beginning not seemed to be a shortage of financial resources to fund the educations of these students. It is rapidly becoming apparent, however, that this question has already become one of overwhelmingly important proportions. The University of Washington and the University of California at San Francisco have described forthright and creative attempts at garnering special financial resources for minority student education. The members of the local medical community are being asked to contribute to the financial support of the medical education of minority students.

The Josiah Macy Foundation has supported conferences where the question of increasing minority student representation in medical education has been discussed. The Federal Government is interested in medical manpower from minority communities, as evidenced by the sponsorship of this Conference; but no organized program of financial support of minority students, themselves, in medical schools has yet materialized.

There was agreement expressed during the March Conference that programs for minority students already admitted to medical schools must include programs of academic support; this might take the form of special counselling and tutoring and/or special pacing of the curriculum. Because of the high degree of poverty in the families from which minority students come, it is also necessary that financial support be provided. Because of the uncertaintly with which ny minority students approach medical education, they are frequently reluctant to incur indebtedness to finance their educational and living costs; the possibility of their being dropped from the educational program and thus having an outstanding debt looms large in their minds.

During the Conference there was also much discussion of programs for special admission of minority students to medical schools. Frequent themes expressed during these discussions included the necessity to vary the usual standards of admission. Most commonly this takes the form of lowering whatever quantitative cut-off points are used for MCAT scores and for grade point averages. Although results from the study currently being conducted by the Association of American Medical Colleges Central Office on MCAT bias in minority students are not yet available, there was consensual agreement that educational disadvantages most commonly suffered by poor minority students make for lower MCAT scores from these students. Similarly, the need to work to support undergraduate education, as well as other stresses, frequently make the student's college grades an insufficiently accurate predictor of his potential for successfully undertaking medical studies. The verb "varying" rather than "lowering", therefore, seems the most appropriate term, when it can be determined that the student's potential for success in medical studies is not adequately represented by these numerical indices. In some instances medical schools related experience with a deliberate lowering of admissions standards in the sense that the student was felt to require remedial educational involvement before undertaking the medical curriculum, such remedical efforts not being extended to nonminority students. Whether or not such altered issions criteria are utilized, all participants in the Conference agreed that the student's knowledge and competence at the end point of his medical schooling should be comparable to his nonminority peers in the graduating class.

Another common theme from the Conference concerned the necessity for communicating to minority students who are about to finish their undergraduate careers the information that both financial support and a welcoming attitude await them in medical school. Active efforts on the part of medical schools must be made to overcome the mistrust by minority groups that the schools are heir to. As was mentioned, this information can most effectively be communicated by minority students presently performing successfully in medical school.

Perhaps even more important than the vital short-term efforts of increasing the representation of minority students in medical school classes is the long-range encouragement that will be needed to insure this representation in equitable numbers. The medical school must participate in effective communication with younger and younger students, perhaps even into the grammar school years. Such a community-oriented effort would seem to run counter to the urgings of such educators as Robert M. Hutchins, who urged that the university remain a community of scholars insulated from many social pressures and avoiding such extremes as supplying the society with all of the specialists it requires. Desirable as such a haven for intellectual inquiry may be, there seems no doubt, so far as university-based medical schools are concerned, that such a goal has less relevance now than at any time in our past.

Editor's Note: The following list was compiled in the course of the Western GSA meeting at Asilomar in March, 1969. It is reproduced here for reference purposes.

PROBLEMS CONNECTED WITH RACIAL MINORITY GROUP RECRUITMENT FOR MEDICINE

Racial imbalances among faculties and administrations - lack of models.

Limited numbers of Racial Minority Group Students in medical schools - lack of models and identification; lack of most effective recruiters.

Lack of appropriate recruiters and counselors at all educational levels.

Lack of interest among prospective applicants - negative counseling early in life and throughout educational stages.

Lack of financial support at all educational levels.

Parental and cultural attitudes toward professions vs. business - differential duration of studies and delayed returns.

Curricular flexibility - for better preparation, and for repair.

Lack of early committment of places by medical schools to potentially qualified applicants - perhaps to overcome in part the lacks of models at the present time.

Backlash - from students, faculty, community, alumni, medical societies, parents, governmental agencies (accusations of reverse discrimination).

Rigidity of admissions procedures - use of numerical screens, as in preliminary applications.

DISCUSSION

RACIAL MINORITY GROUPS IN MEDICAL SCHOOLS

Panelists: Granville Coggs, M.D.
Wallace Epstein, M.D.
Arthur Hernandez
Anthony Metoyer

Moderator: Harold J. Simon, M.D.

DR. SIMON:*

Mr. David Wren, a student at the School of Medicine, University of California, San Francisco, was unable to be with us today. This is very unfortunate, but I have asked Dr. Wally Epstein, Associate Professor of Medicine, University of California Medical School, San Francisco, to take his place.

We also have Mr. Arthur Hernandez from the School of Medicine, University of Southern California, Los Angeles, Dr. Granville Coggs from the School of Medicine, University of California, San Francisco, and Mr. Tony Metoyer, campus recruiter for the Educational Opportunity Program at the University of California, San Francisco.

I have asked Mr. Hernandez if he would open the discussion by informing us about some of his experience and discussing some of the problems with which he is particularly well acquainted, most specifically with regard to the Mexican-American in medical school. As Dr. Green has pointed out, Chicanos comprise the largest minority West of the Mississippi and, as with the black minority, are grossly under represented in the health professions.

MR. HERNANDEZ:**

The problem with the Chicano begins the day he is born. Because, from the day he is born, he learns to speak Spanish from his mother and father. It takes him about six years, and by that time he has developed a fluent vocabulary in Spanish.

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*Dr. Harold J. Simon
Assistant Dean
School of Medicine
University of California, San Diego
La Jolla, California

**Mr. Arthur Hernandez
Sophomore Medical Student
School of Medicine
University of Southern California
Los Angeles, California

At six years of age, he begins first grade. There he is told his language will be of no use to him the rest of his life, and he must forget just about everything he has been taught: his language, his culture, just about everything. So, for eight years, he goes to school. During that time he is taught to salute the flag, but not to speak Spanish.

By the time he gets to high school, he is thoroughly brainwashed. He finds himself rejected. During high school he is taught that he is an inferior person and that his citizenship is only second rate because he happens to be of Mexican-American descent.

In the East Los Angeles area where I come from, among the Mexican-Americans there are four high schools, four public high schools, and the average drop-out rate is about 60 per cent. If he finishes high school, he may go to a more or less glorified high school. That is known as East Los Angeles Junior College, and is really a farce. Or, if he is lucky - very lucky - he may get to go on to UCLA or USC. And if he is one of the very lucky few, he may get a scholarship and not have to work while studying.

If he is extremely lucky, he may graduate and enter medical school. So, I'm one of the extremely lucky ones, and that's why I probably am in medical school right now.

You ask, "Why are Chicanos not represented in medical school?" One problem is found right here at this conference. The Chicano is the largest minority in the whole Southwest, and I think that I and only one other man here are Chicanos.

What does this mean? It means if there is no emphasis on recruiting Chicanos into the medical schools by people who are involved - you people here - then there won't be any Chicanos in medical school. If recruiting is not taken to the high school level - if high school kids are never taken to the medical school campus - for recruitment of premedical and medical school students, the Chicano representation in medical school will never be increased.

Probably the greatest hang-up any Chicano has is his language and his culture. We don't want to forget our language, and we don't want to forget our culture. But it is pretty obvious that, in order to make it in our society right now in the United States, we have to forget part of it.

Recently, Governor Reagan or the Legislature failed to pass a bill which provided great emphasis on bi-lingual education, from grammar school through high school and beyond. If the Man won't even communicate with us, if he won't even communicate in our own language, then it seems to me we will never have adequate enrollment in any large university or professional school. If we have to have a psychological revolution at six years of age, when we are told we have to start forgetting everything and learn a whole new culture, well, you know - -

At USC, there are two of us there right now, two Chicanos. Next year there will be nine of us - Chicanos. We are making plans, the two of us there now, to form a MECHA (Movemiento Estudiantil Chicano de Aztlan) chapter next year to make sure t those nine, all nine of us, will not be rejected or subjected to pressures in any of our activities. Our main purpose is to keep all nine of us in school by giving mutual assistance, and by tutoring whenever we can.

We know there are people who are trying to do things for us. These liberals are getting pressure from the racist trustees and the dean to limit the number of minority students who are going into USC. It does not seem to be so much the number of Chicanos, because it seems that at USC we are sort of the lesser of the two evils now. Blacks are more conspicuous than we are. As it stands right now, nine per cent of accepted students at USC are black. I don't know what's going to happen next year. I'll stop now, and hope we will be asked questions from the audience.

DR. COGGS:*

I would like to recapitulate some of the things that have happened at the School of Medicine at the University of California in San Francisco which began in 1955 and accelerated during the past five years.

When I came to UCSF in 1955, there was about one Negro student in each class of 120 to 130 students. About five years ago, a committee was formed to try to ascertain how the Negro student could be helped. Dr. William Garoutte told me that one of the most impressive things he had experienced was that the problem wasn't how to help the Negro student in medical school, because obviously there are so few, but how to get more significant things to happen, how to get more into medical school. He pointed out that the Southeastern area was where the minority students could be recruited. Dr. Thomas N. Burbridge then made two recruiting trips to the Southeast to inform black students in the traditionally black colleges that there was an open door policy at UC, San Francisco. As a result of these and other efforts there are five black students in the present Sophomore class, and eight in the present Freshman class.

In the last two years, a significant thing happened at the University of California at San Francisco. Last fall, in great part because of feelings and activities by black students in the Freshman and in the Sophomore classes, an intense desire became manifest to increase the minority enrollment in medical school. A catalytic thing happened in that group of black students, a black caucus, presented demands that the number of black and brown students at the school be increased to 25 percent of the medical school class. That would be 32 students out of a class of 130.

I'm a member of the medical school faculty, and most of my work is in Radiology. I am not familiar with all details of what happened, but the faculty

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*Dr. Granville Coggs
School of Medicine
University of California, San Francisco
San Francisco, California

early was sympathetic to the demands. They decided that a certain number of places would be, or should be, held open so that black and brown students could make application and be considered for the class in 1969.

This group also requested that a separate sub-committee be formed to consider minority students, and that this committee should consist of black people from the community and a Mexican-American, as well as those already on the faculty and on the committee. A separate Sub-Committee on Special Problems was set up to consider minority applicants. It consisted of seven members; one Caucasian, a Mexican-American, two black medical students - one from the Freshman class and one from the Sophomore class - two black physicians from the community, and myself, a black physician on the faculty.

There has been an intense recruiting effort throughout California, particularly by the students in the first and second year classes. They identified 120 disadvantaged Mexican-American and black students. The Sub-Committee considered these applicants and ultimately recommended that 22 black and 10 Chicano students be admitted to the '69 class. The Executive Committee, the Admissions Committee, and Dean, and the Chancellor approved these recommendations. So, in next year's class, there will be 22 black and 10 brown students out of a class of 130.

To me, one of the most significant things that has come to light while I was working on this committee is the relatively few applicants on which to draw. A most important factor in the results is the publicity given to the fact that San Francisco does have an open door. This has encouraged a greater number of black and brown applicants to apply who would not have otherwise applied, and there has been this increase which I have discussed.

We are convinced that the people whom we have accepted have the potential to complete medical school; that they also have the necessary motivation.

There will be a summer program to help the transition of these students who have been accepted. This program should help to give them the confidence and the opportunity to work out some of the problems that they will have, and which they do have - problems of adjustment, housing, and so forth. They will become familiar with the faculty and with the actual layout. They will be attending lectures and will be getting themselves scientifically and sociologically oriented, and they will have some laboratory work. They will have some time with advisors individually and in groups.

I feel very confident about the performance of this group, and I think that they will distribute themselves throughout the class, and will function well.

DR. SIMON:

I think it is at least in part a comment on the changing times, that Dr. Epstein can be regarded as representing the majority elements on a minority recruitment committee. Dr. Epstein.

DR. EPSTEIN:*

We are constantly being reminded of the disadvantages of being beyond a certain age when participating in these conferences. One of the advantages of being beyond a certain age is that you see the repetition of cycles.

My own education at CCNY in New York years ago has a certain parallel in terms of the distribution of Jewish students in medical schools at that time. CCNY is still trying to figure out some new attitudes towards minority group students. The cycle becomes clear when I recall that I went from CCNY to the College of Physicians and Surgeons with Dr. Severinghaus as my Dean.

I have been on the Admissions Committee at UC, San Francisco, for eight years. One of the things I would like to point out concerning leadership in the Black Student Union is the fact that we chose the leadership of the Black Student Union, black students, some three years ago. If Faculties persist in allowing students to anticipate them in perfectly clear issues, we are going to continue to have a great deal of trouble.

Many points have been made. I think one of the points that has not been made as far as the qualities sought, the qualities we sought during the last several years that contributed to the formation of the present Black Student Union, were the qualities of leadership and aggressiveness. I don't think the point has been made that we are recruiting a physician population in the midst of a social revolution. I don't think there is any way we can look at recruitment here from cold, academic probability characteristics without considering the fact that you have to recruit leaders. The reason we have been very successful is that we have some of the most aggressive, scheming, positive black leaders that I've ever seen, and I'm sorry that they're not here.

MR. METOYER:**

I wasn't going to say too much, because I wasn't originally on the program.

But speaking of demands, creation of my job was one of the demands made to U.C. by the Black Caucus. At the hospital, we have about 4,300 people, of which over three-fourths are black - maids, janitors, aides, etc. They threatened to close the hospital, which they could probably do. This brought about the arrangement that 25 percent of all entering classes would be from minority groups. So now there are 32 medical students, as Dr. Coggs mentioned. The only real weakness is in our nursing program, because we have not been able to knock down all the barriers. Some, who would come to the University, are hung-up on the residence requirements, and that's our weakest program at this time.

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*Dr. Wallace Epstein
Associate Professor of Medicine
Dept. of Medicine
School of Medicine
University of California San Francisco
San Francisco, California

**Mr. Anthony Metoyer
Campus Recruiter
Educational Opportunity Program
University of California, San Francisco
San Francisco, California

We have an X-ray program taking minority people right out of high school, and we have started an internship program there where we also had to knock doors down.

There are people on the campus - biggots and racists - who are not letting our people in because of weight, or height, or you name it; they wouldn't let them in.

I noticed something that Arthur Hernandez said, and I made a note of it, about campus recruiting. When you say you go on all black campuses - when a majority person walks in - I wonder how you really relate to these students. I would wonder, "Are they really totally committed?" Because if you really wanted to relate to these students, I think it's good to be sure that you do relate to them. I'm not saying that I could relate that well to everyone, because I'm not a Mexican, and I'm not an Indian. But I feel that if you get a few of the Chicanos and Indians in here and on my side, by working with them I will be able to relate a little better. How well you relate to them is one of the many things you really have to consider if you are serious in what you are talking about in recruiting minority students.

DR. BEILBY:*

I would like to make several comments at this time because I was the one who was directly responsible for one of the handouts, the one from the Claremont lleges Center for Educational Opportunity. If you looked at this, you might wonder how this is directly relevant to the discussion here today, and I agree it is perhaps not directly relevant. I do think it presents something of the over-all picture of minority students in their quest for education.

This describes the attempts that the Claremont Colleges have made in the field of education of minority students. Most of the discussion this morning has centered around the short-term solution to the problems of increasing minority students in medical schools. I would like to direct some of the talk toward the long-term solutions of the problems of minority students in medical schools. Some of these will be covered in my own paper tomorrow. I think the medical schools have a larger recruiting problem than just to recruit students currently enrolled for their classes. They have to get down to the high schools and do their recruiting at that stage as much perhaps as at the Junior and Senior levels of college.

Because of the programs in the Claremont Colleges, Pomona College will have 10% blacks in our 1969-70 Freshman class (actual figure 9.3%). I think the Chicano percentage is not as high (actual figure 5.7%), and the over-all

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Dr. Alvin L. Beilby
Chairman, Medical Sciences Committee
Pomona College
aremont, California

percentage of minority students accepted for next year will be somewhere around 15 percent. Of our currently enrolled minority students, as far as letting me know as premedical advisor, there is not one who has indicated a desire to go into medicine.

I don't know the answer to this, but I think this is why we have to get down to the high school level. Among white students at Pomona College, about 10 percent usually are thinking of medicine. In a student body of 1,200, this would be about 120 students. If we applied the same percentage to the minority students, we should have about 10 currently thinking about going into medicine.

So I would urge that the medical schools get out into the high schools in some fashion, and also get into the colleges at the Freshman and Sophomore levels. For policital reasons it probably would be advantageous at this stage to work through the Black Student Union or other student organizations, rather than through the premedical advisors. I think it would be better to try to recruit or interest the minority students by working directly through their own organization.

DR. LIEBESKIND:*

I'd like to find out more about the implementation of recruitment programs that Mr. Metoyer has alluded to here today. I have heard it expressed a number of times by medical school administrators that they would like to attract more minority students, but that these students just do not apply. So, for the benefit of the medical school recruiters who haven't been very successful so far in recruiting, I wonder if we could get Mr. Metoyer to tell us a little bit more about the success that he has had and what he has done to achieve this success.

MR. METOYER:

I think Dr. Coggs really hit the nail right on the head when he said the entire campus community there was interested in our efforts. I don't feel we would be as successful there if we didn't have the backing of the whole campus. I feel this is lacking in the majority of the campuses, because they don't have full support on their own campus. I can well imagine what it must be like where they don't get this support. It has to be a group effort.

Our program has meant a lot of work. It has required a lot of organization, and a lot of worry, and a lot of visits. I cannot record 100 percent success because, basically, my campus has had the reputation of being a lily white institution. You just have to go out and keep trying. Instead of only saying that you are really going to publicize the fact - you really have to do

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* Dr. John Liebeskind
Premedical Advisor
University of California, Los Angeles
Los Angeles, California

. You really have to go out and really make an effort, even if it means doing what they did on my campus. You need someone who can communicate with the minority groups, rather than just sending a doctor. Even at UC they sent out a doctor. He was a generation gap type person, a 60-year old doctor who was to talk to some modern type students and that's not the way. I'm almost 30, but I still can relate. I have been around a little bit. I didn't go right straight from high school to finish college. I have been around a little bit, and my personal experiences have helped me.

But there is still a lot that you, yourselves, can do in your schools. You can push this thing. I think there is a lot of interest, but when it comes down to actually doing it, writing to people, getting funding, and making a few trips to schools, and this sort of thing, you just have to keep going around. You can't stop. You have to continue through.

DR. LIEBESKIND:

It seems to me important that you are a professional recruiter, you obtained a lot of medical students.

MR. METOYER:

Right. This is true. We have a lot of heterogeneous students there and we kind of just kept making rounds and visits. Sooner or later; this becomes t of second nature. But we don't want to bring them in here and then flunk them out. You're defeating your own program if you do that. And you can help by using your own students, and also the doctors there. They can help, but they can't be recruiting all the time; they have their own work to do, too.

DR. DRISCOLL:*

Dr. Coggs mentioned the 32 medical students who will be coming to the medical school this fall. When you identified them, were they all desirous of coming to medical school, or did you find the potential students and then convince them to come to medical school?

DR. COGGS:

I would say that the majority of these students had long-time and definite motivations. They wanted to come to medical school, but didn't have the intense operational motivation because they had either financial difficulty at home, or premedical academic record problems. Many then reacted to the publicity that applications would be encouraged. The thing that impressed me most, from publicizing the fact that we welcomed applications, was that we had some

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*Dr. William T. Driscoll
Associate Dean
University of Denver
nver, Colorado

applicants - well, two people - one who had his Ph.D. in Physical Chemistry, and the other who had met the requirements for his Ph.D., but had not applied to medical school. They would not have applied if they had not seen the publicity to indicate that they were welcome, and that there was an open-door policy. Most of these students had the long-time motivation, but felt that it just was not possible for them.

Today, we publicize that these people would be welcome, and we encourage them to believe that they may be accepted. I think this is the most important factor - to encourage those who apply, and not let the feeling spread that you have to be a super black or a super brown to be in medicine.

MR. METOYER:

I would like to add one comment. Since UCSF is a medical school and also a hospital, we were able to find applicants who work right there with eventual medical aspirations, and other people who have just never tried. They went so far and just stopped. They never looked any further as they did not think they could make it. And, like I say, by publicizing we found people who were working right on our campus; people who didn't know and didn't have the motivation.

DR. EPSTEIN:

From a practical standpoint I would say that everybody is still avoiding a major issue. Some of the applicants that the special minority committee considered this year really would not have had a chance if they were brought before our regular admissions committee. We seem to be avoiding discussion of changing standards for admission.

Our special minority sub-committee is predominantly black; all with a very strong interest in getting people in. The fact that we are looking at a population with exceptional characteristics in terms of age, the kinds and numbers of schools attended, jobs held, responsibilities - all sorts of things - is a very important factor. I would ask that, if you can, you consider not only the recruitment aspects, but also the composition of your admissions committee. These applicants should be seen in a context which is different from the standard of a student with a 3.65 grade point average from Pomona.

In that context it would be very difficult for a standard admissions committee to take several of our very distinguished black students.

DR. BARTLETT:*

Despite the increasing number of qualified candidates of all kinds for medical schools, there is a very slowly increasing number of medical school

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*Dr. James W. Bartlett, Associate Dean
School of Medicine & Dentistry
University of Rochester
Rochester, New York

aces. Considering also the fact that many of the educational and social barriers before medical school are more rapidly disappearing now, so that it is possible to have 32 black and brown students coming to UC next year, how did you get your institution behind you on this? There are many contradictory questions in these facts, and I gather you got your institution pretty well focused and committed to this effort without apparently any great internal difficulties.

MR. METOYER:

It's very possible that the threats from the Black Caucus convinced them.

DR. EPSTEIN:

Oh, now wait a minute; wait a minute! B.C. on our campus sometimes means before the Black Caucus came to be. Our efforts began before that. As I pointed out, we selected the members of the Black Students Union, and it did mean that certain groups, departments, and schools had to be dragged by the heels into the 20th Century.

I think it has a lot to do with the fact that everything kind of slides from the Eastern half of the United States to the West. There is a certain climate. I think it is true in San Francisco. We have a large number of blacks and minorities at all levels on our campus. I don't think it just happened. I don't think there is any special technique. I think that the stage was set by our 10 years of talking on various levels. When this was done, when the 25% placement level was found, it was done by an almost unanimous vote by the academic senate. So, before these things happen, a lot of spade work has to be done. We recruited the nucleus of the Black Students Union, and we had their demands. Finally, there was the very sensitive response of the Chancellor to the Students. It doesn't happen over night. I think there is a warm esprit de corps, and it preceded the black student issue.

DR. SWANSON:*

I'd like to make one comment, and then ask a question.

Regarding Dr. Beilby's comments, the comment about getting farther down for the long-range program, into the high schools and even into junior high, I think it's not enough to conceive of this as some sort of career's day participation, or recurrently visiting counselors. I think one has to develop meaningful programs which would demonstrate to the students, who are increasingly becoming skeptical about the value of education of any kind, to demonstrate to them that what they are doing has some relevance to what they will do in the future.

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*Dr. August Swanson, Associate Dean
hool of Medicine
University of Washington
Seattle, Washington

One of the things we've done in Seattle in working with our largest inner-city high school is to develop a cooperative program called the Life Science Program. This really is a course in comparative biology. The students who elect to take this course, have a course in basic biology. Then, in conjunction with this, they do field work in various laboratories throughout the city, especially in the University's Health Sciences Complex, and also in places like our city sewage disposal plant and similar laboratories which depend upon biological phenomena, and we supervise their activities.

The students this year spent part of every week working in these laboratories with the view that, as the summer approached, we would find something for them to continue in a summer job as a laboratory assistant. This is working. We will have approximately 50 students, essentially all black students and a few Filipinos, in this program during the coming summer. It's not easy; the funding comes from so many different sources, I don't know how we're going to keep the pay checks straight. Part of the funding comes from private sources, dredged up by our black physicians and dentists in the community. Part of the funds come from OEO, but very reluctantly. Part of it comes from the University, and part of the funds come from private donors who may later hire these students.

Last year, the same experience demonstrated that we were able to, in at least one-quarter of the cases, turn students toward college who had never considered college before. Whether we were training for the health sciences, or toward medical school, is another matter. We will have to find out later.

I think this approach is very important. Medical schools or universities or colleges should cooperate with high schools to develop meaningful programs that students can use to demonstrate to themselves that there is some relevance in formal education; that there is a pay-off in the long haul; and that there is some gratification, although it may be delayed. These are critical issues.

Now I have a question.

We talked about the question of the UC campus community accepting the principle of reserving one-quarter of the available places. What about the general community in San Francisco and Northern California, the Legislature, et cetera? I've been feeling some signs of backlash. We are asked why we are taking a particular student. "He is not as well qualified as the son of a constituent, and you didn't let him into medical school." Are you getting that sort of thing in California as a result of this campaign?

DR. COGGS:

I don't know the answer to that. I would say we expect it, but it's quite early yet. I haven't felt it, and if I haven't felt it, it probably has not hit us yet.

MR. METOYER:

I think we feel a little pressure, at least with respect to the financial situation. The majority of the minority students fall under the EOC program, and these students will get top preference for financial aid, grants, and other istance on the campus. Once that takes effect in the fall, it is entirely possible that it will be followed by some backlash.

DR. EPSTEIN:

There is one thing I can say. Many departments in the medical school have asked their representative on the admissions committee to attend a departmental meeting to answer certain questions. It is true that faculty members are hearing just what you described, and are asking the various members of their departments to come back and explain again what we're doing, why we got into it, and so forth. So, it does exist.

DR. SWANSON:

Outside the campus?

DR. EPSTEIN:

Yes, the faculty members are hearing it, and they're trying to figure out what's happening. I think the performance of these groups of students that are in the first, second, and third year classes is the most bolstering fact, because this is not theory - these students have put in two or three years, and their places in the class are perfectly satisfactory and secure.

Dr FRIEDKIN:*

We have five black students at Tufts University School of Medicine and I have already encountered backlash. It comes from individual white students who feel that tuition is much too high, and that one of the reasons for this is the acceptance of black students who can't afford to pay tuition. Black students are accused by white students of depleting the loan resources of the medical school.

This is something, I think, to consider as a whole. The structure of the medical education plan is at the very heart of this problem. It is a factor that requires much consideration as the years go by. There is no doubt in my mind that there is discontent among the white students. I'm inclined to say to the white student, "If that's the way you feel about it, too bad." It is an important matter that must be openly discussed between white and the black students.

MR. HERNANDEZ:

At USC there is not that much discord among the students because of a lack of funds. But, as I understand it, two of our trustees' sons were not admitted

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Dr. Morris E. Friedkin
Tufts University School of Medicine
ston, Massachusetts

to the Freshman class this year, and the black and brown people were. As a result there has been a question that some of the funds allocated to USC were cut, and the Dean has had a lot of trouble getting money. I think it's just exactly what you've said, white backlash.

DR. KUMAGAI:*

Dr. Swanson, do you have minority students working on these projects? Are they just assigned by guesswork, or are they actually working at something they are already interested in?

DR. SWANSON:

They're often working on going projects of interest to them. We ask the faculty to send out job descriptions. We get a pretty good turnout, generally. Last year we got twice as many jobs as we could possibly fill. We also have a committee made up of black physicians and high school counselors or high school representatives who sit down and try to match the students to the jobs. We have interviewed the students, we know what they want, and we try to come close to a match. If the student is more interested in electronics, we try to put him in a job that will use some electronic equipment. We have students we can place in jobs related to the medical profession. We do everything we can to assure these jobs are meaningful to the students and to their ultimate career jectives.

Students are paid $50.00 a week for 10 weeks. As I said, we had a hard time figuring out the funding. It comes from so many different sources.

DR. KUMAGAI:

For most of the minority students now it takes a lot of courage. As for myself, I'm a coward, like my uncle. He was a national hero - he was a Kamikaze pilot with 12 missions.

At Utah, we have a committee working on the education of minority groups, too. We have white, black, brown, and red individuals, and myself - representing the jaundiced view.

I think one thing that does come through is that, in many respects, these conferences are not very helpful, mainly due to the fact that virtually all of the people who are here are here because they are particularly interested.

I think the important thing is, and it has been discussed, that interest has to come not only from the faculty and administration, but also from the students. There has to be a person from the faculty who understands what it's

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*Dr. Lindy F. Kumagai
Associate Dean
University of Utah College of Medicine
Salt Lake City, Utah

ke to be a minority group member. I think everyone should realize that those who are different because of skin pigmentation, appearance, et cetera, have had this kind of feeling. We realize that we really have to be a hell of a lot better just to be treated equally. I think as long as there is this feeling of difference, I think everyone is going to have to do something about this to try to equalize things, or it just won't work.

I think it's unfair, perhaps, in many respects to bring the disadvantaged students into a medical school and put him in an environment that isn't ready for him. It has to come from the student body. I'm sure it has at San Francisco. And it has to come from the faculty. There has to be an open dialogue between students and faculty.

DR. GREEN:*

For many reasons, I think the point you raised, Arthur (Hernandez), is very important. At USC, where we are dependent on private donors, their donations are often conditioned by their attitude. You can't ignore that, because without them we would have nothing on which to operate.

DR. POOL:**

You had considerable success in the program at UCSF. I wonder how you countered the idea of quota-ism? You said that all but one member of your ademic senate accepted this idea. On our campus at UCSD there is considerable ntroversy as to whether or not it's a good thing or a bad thing to have a quota. But that's beside the point right now. The question I have is how do you manage these objections politically and how do you overcome them? It's really surprising to me that everybody in your academic senate could have gone along with the idea of having a quota. Would you say it again to reinforce this point?

DR. EPSTEIN:

I keep having to refer to the fact that the emphasis has to be on a vast number of issues - curriculum, faculty appointments, anything you want to name - over many years preceding this particular question. There has to be an environment that is consistent with this attitude. It's not possible to have an antecedent 20 years of relatively reactionary conservative response to a vast number of situations and then suddenly say, "By the way, the next item on the agenda is this." Of course, you can't do it. This awareness of the social revolution, this sense of obligation for hundreds of years of injustice, cannot come out of any short discussion but must result from the general response of the faculty to a vast array of questions, values, and attitudes. I don't think there is any immediate set of arguments which would convert a group that would normally respond negatively to a question of this nature.

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*Dr. Gerald Green, Associate Dean
hool of Medicine
University of Southern California
Los Angeles, California

**Dr. Peter E. Pool
Department of Medicine
University of California, San Diego
La Jolla, California

Remember, San Francisco has a large Oriental population. But our decision was that the Orientals and Jews are not considered as members of these minority groups. Any application from these groups that came before our committee was not considered a minority application, and was immediately transferred to the majority committee. That point of view was supported by the Orientals and the Jews on the committee. This support does not come up suddenly, but only with a set of logically presented arguments.

MR. METOYER:

I want to make one comment on that. Since I've been there, a commitment has been made, and a lot of these things will work. I'm sure they will really work. However, we have some people who work in the Dean of Students' Office, which I work out of, and particularly one in our administration office who, when applications start coming through their offices, are very reluctant to deal with them. I say we do have a good program, but it's not totally successful. Especially in my job as recruiter, they say, "Sure, here are 19 positions for minority students." But there hasn't been a month since I've been on that campus that there hasn't been some door that we had to knock down each month to get the placements for these students. They say it, but you can't make them do it. You can't actually put into action everything that they said they would do. I think it was very easy for them to say, "Sure, we can give you 19 places", and let it go at that. We made an effort to bring in 19 students, but there was wall there, and we feel it is still there.

DR. PAGE:*

I'm a little concerned about this experiment from another point of view. We heard this morning that one of the problems in recruiting black students at the Southern schools has been that they are recruited away by business, or industry, and by other opportunities. In talking to some of the teachers in these colleges, they have told me that they have been very distressed by the fact that their very best students are in fact being wooed away from an academic life of any kind, or from going on to further education of any kind, by industry. Now, if that be true, then the problem is as it has always been - how do you get more people interested? And we've heard some answers to that.

Your experience would show that you can get this number this year, some of whom have come from your own community. I wonder if you are going to continue to be successful. Looking at this situation as best I can, it would seem to me that, if one were going to try to move upward in society, this (the medical profession) is the long way of going about it. It may be another generation before significant numbers, at least in some population areas, are going to want to move in the direction of going into medicine. I'm concerned for the immediate future of this experiment. It is likely to be very successful

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Dr. Robert Page, Dean
edical College of Ohio at Toledo
Toledo, Ohio

this year. And it may be successful next year, because you will have an applicant pool of significant numbers, and who will successfully complete the course. Yet, in future years, I'm concerned that it may not be possible because of a decrease in the applicant pool. And the concept of quota, which was mentioned earlier, may not be the best way to do it, although I can certainly understand the reasons for it now.

I wonder if you could address yourself to the problem of continuing the success of this recruitment program, not only for one school, but as it might be translated across the country to a hundred medical schools.

DR. COGGS:

I will speak to that.

There is at least one thing it will accomplish. People in the rural mountain areas may never have seen a Negro doctor. My father didn't know any Negro in medicine. He didn't know any, and it didn't occur to him that Negroes could become doctors. He didn't consider applying to any medical school. I know that with his potential he could have made it, but he didn't know enough to try. This is one of the reasons there have been so few Negroes in medicine during the past years. This is significant, and I'm sure there will be many more applications in the future.

R. POOL:

And the quota?

DR. COGGS:

We are committed. I think that this is the crux of the situation. There is the question of the philosophy of whom we shall take. What is best for society, over-all? I shudder, too, at first thought, at how this number was defined - the numbers of black students and of Mexican-Americans. It was defined by the very simple calculation that we represent 25 percent of the population, and that we should be served by people from our own culture. I think that if you define the philosophy, believe in it, and act on it, you will actually find people who can meet your requirements. I really think that you have got to act on what you believe in.

DR. WEYTER:*

I think one of the ways in which the applicant pool could be increased is by designing a specific program at the undergraduate level for those premed students, those premed minority group students who may be interested.

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*Professor Frederick W. Weyter
Department of Biology
Colgate University
Hamilton, New York

A group of four students, a faculty member, and myself were doing this last year. As far as we have been able to ascertain, no other school in the United States has a program similar to what we designed. I think there are some interesting features that you might be interested in. I can mention them briefly:

We work on the principle that the needs of the minority group community are basically different - that is, the greatest needs are in the social and preventive aspects of medicine.

The physician who is going to serve this community will likely be a leader of that community, and is more apt to get involved in the problems of the community, where a physician in the white suburban community would not be so involved.

We also work under the assumption that the program should not be considered in any way a watered-down version of our premedical program. Rather, we know there are different needs, and the program should be designed accordingly.

In designing this program, one of its major features is a strong emphasis on the subjects from urban studies, from the area of the Afro-American studies, but it is still designed to meet the medical school requirements.

Also, we have incorporated a work-study feature in the present program. The program is actually a year-round operation. During summers, they would be involved in community work locally. We are trying to set up a program in association with various agencies, and establish contact with the medical schools to insure that the people participating in the programs may be able to find placement in the medical schools.

Lastly, we have attempted to structure the financing of this so that the students will receive a stipend, plus a summer fellowship, plus, if possible, a living allowance to minimize the external financing necessary for their support.

All in all, I think that if one can create a specific program at the undergraduate level geared for minority students, then you can attract these students into such programs and thereby increase the pool for medical schools to draw on.

DR. FRAZIER:*

I am concerned particularly about the matter of competition among the various schools represented here this morning. I think that each of us in our own area is attempting to develop an applicant pool of minority students, but none of us is as successful as the group in San Francisco has been.

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* S. Douglas Frasier
Assistant Professor of Pediatrics/Physiology
University of Southern California
Los Angeles, California

If I heard correctly, the sub-committee considered about 120 people for these 32 places. What happens to the other 80 or 90 people? Can you share any information with the rest of us? Do we share information with you? I doubt it very much, because it seems to me schools are competing for some applicants as though they were baseball players. Now this is stupid, terribly stupid, and disruptive. Something has to be done to discourage this. It seems this is not as great a problem as it was some years ago, but it is still being done.

MR. METOYER:

I have a comment on this. In my position as campus recruiter, I have given information to other schools concerning applicants that I have received. I would also like to say to anyone who is interested, just to let me know. At the same time, if you are interested, come to the school, or contact us, and if you want their applications, this would be fine. I, myself, don't know where to send these people, and I have been sending names and addresses to people who are interested enough to come to us to find out. I know that we are doing this, and I'm sure that there are others. We are doing the best we can, and we are doing this because, well, I think it's only natural.

DR. SIMON:

Clearly we have just begun to scratch the surfaces in this area. It's also obvious that in the succeeding sessions we are going to continue to follow through on several of the issues that have been raised here this morning.

EDITOR'S NOTE

The importance of the Conference topic on "Racial Minority Groups in Medicine" can hardly be overstated. There will probably never be sufficient time to explore this subject to the depth it really deserves. The subject has, however, been addressed in a variety of publications.

On specific request, Mr. Douglas C. Johnson, Student Affairs Aide, and Dr. Davis G. Johnson, Director, Division of Student Affairs - Association of American Medical Colleges, prepared this annotated bibliography on very short notice. It is provided for those who may wish to pursue this topic in greater detail than was possible at the Conference.

Budde, N. H. (Ed.): Wanted: More Black Med Students. P. R. Doctor, March/April, 1969, Pp 8 - 11.
Emphasizes activities and recommendations of the American Medical Association.

Cogan, L.: Negroes for Medicine: Report of a Macy Conference. Baltimore, Maryland. Johns Hopkins Press, 1968.
Explores what is being done, and what can be done to encourage Negroes to seek careers as physicians.

Cole, M.: The Representation of Black Students in Schools of the Health Sciences. (Available from Chicago Student Health Organization Office, Billings Hospital, Room C-374, Chicago, Ill. 60637), 1969.
A position paper prepared for the Chicago Chapter of SHO.

Edgerton, J.: Higher Education for "High Risk" Students. April, 1968. (Single copies free; bulk orders at 50¢ per copy from the Southern Education Foundation, 811 Cypress Street, N.E., Atlanta, Georgia 30308).
Reports the results of a comprehensive survey of programs for high risk students in U.S. colleges and universities.

Hutchins, E. B., Reitman, J. B., and Klaub, D.: Minorities, Manpower, and Medicine. J. Med. Educ., 42:809 - 821, September, 1969.
Summarizes data (including tests and questionnaire replies) on women and Negro applicants and enrollees in United States medical schools.

Jarecky, R. K.: Medical School Efforts to Increase Minority Representation in Medicine. J. Med. Educ., in press.

Johnson, D. G. (Ed.): Minority Student Opportunities in United States Medical Schools 1969-1970. Evanston, Ill. Association of American Medical Colleges, 1969.
A compilation of one-page descriptions, ordinarily prepared by the medical school admissions officer, of efforts to increase minority student representation at each of 91 of the 100 U. S. medical schools considering applications for the 1969-1970 school year. (Available at $2.00 per copy).

Johnson, W. L.: History of the Education of Negro Physicians. J. Med. Educ., 42:439-446, May, 1967.
A history of Negroes in medicine since the Civil War.

Josiah Macy, Jr. Foundation. Preparation for Medical Education in the Traditionally Negro College: Recruitment, Guidance, Curriculum.
Addresses presented at a Macy Conference in February, 1968, co-sponsored by the Association of American Medical Colleges and the Southern Regional Education Board.

Mann, I. K. (Ed.): CAPS Capsule. 611 Church Street, Ann Arbor, Michigan: Counseling and Personal Services Center, Vol. 2, No. 2, Winter, 1969.
Entitled "Disadvantaged", this issue contains articles on improving the counseling of disadvantaged students. Includes bibliography of publications pertinent to guidance services for the disadvantaged.

McDougall, H. (Ed.): ISSP NEWS. Intensive Summer Studies Program, 1907 Yale Station, New Haven, Connecticut 06520.
Includes general information on opportunities and programs for disadvantaged students in addition to news on the Harvard-Yale-Columbia ISSP programs.

Melton, M. S.: Health Manpower and Negro Health: The Negro Physician. J. Med. Educ., 43:798-814, July, 1968.
Includes discussions of access and entry to medicine for the Negro, and of some past barriers to practice by the Negro physician.

National Medical Fellowships, Inc.: New Opportunities for Negroes in Medicine. Downers Grove, Illinois. 1969.
A pamphlet designed to interest Negroes in a medical career.

Paynter, J. (Ed.): Graduate Opportunities for Black Students. 6754 S. Chappel Avenue, Chicago, Illinois 60649, 1969.
A compilation of graduate institutions having policies favorable to black students. Contains information on applying to graduate schools. (Available to students at $1.00 and to others at $2.00 per copy).

Raup, R. M. and Williams, E.A.: Negro Students in Medical Schools in the United States. J. Med. Educ., 39:444-450, May, 1964.

Reed, J., Fisher, S., and Rubin, P.: The Committee for Black Admissions - For Better. The New Physician, 18:296-2-9, April, 1969.
States the views and proposals on black admissions of the Philadelphia Student Health Organization (SHO).

Reitzes, D. C.: Negroes and Medicine. Cambridge, Massachusetts: Harvard University Press, 1958.
One of the most definitive studies (to that date) of the Negro in Medicine.

Sabine, G. A.: A Diary of Something About to Happen: Michigan State's Search for More Negro Students. Coll. Bd. Rev., 69:11-14, Fall, 1968.
Indicates the frustrations, difficulties and successes encountered in Michigan State's search for minority students.

ADVANCED PLACEMENT AND ACCELERATION

A PLACEMENT EXAMINATION IN BIOCHEMISTRY FOR FIRST-YEAR MEDICAL STUDENTS

Morris E. Friedkin

Although my comments deal specifically with the discipline of biochemistry they obviously have implications in the broad area of the basic sciences related to medicine. The problems we have encountered in setting up our very preliminary experiment with a placement examination in biochemistry must be faced and answered in developing similar tests for cell biology, microbiology, physiology, embryology, and histology.

Please permit me to introduce this topic on a personal note. My first experience with biochemistry was in 1940. Although the undergraduate course I took at that time was not given in a medical school, nor meant to prepare us for medical school, the main emphasis in lectures was on vitamin deficiencies; the lab consisted mostly of urine analysis. It might even now appeal to the modern-day student as relevant to a career in medicine. In retrospect, however, it was superficial in the sense that the basic molecular fabric of life remained untouched, undiscovered, and undescribed.

In 1945 I took my second biochemistry course, this time in a medical school environment. My lecture notes were filled with data on the caloric value of proteins, fats, and carbohydrates, the lab entailed much blood-letting and the boiling of hyperdermic syringes and needles. Plastic disposable gadgets were not available yet. But already the first signs of the revolution in molecular biology had become evident. Fundamental concepts of coupled biochemical reactions as a means using free energy released by metabolic oxidations, the storage of useful energy in the form of ATP - these were a few of the new concepts being talked about. In graduate biochemistry courses the next two years we began to learn about electron transfer and the importance of the mitochondria in energy transformations. We were especially excited about Avery's fundamental observation that DNA could transform a nonpathogenic microorganism into a virulent infective agent.

Twenty years later in 1965 concepts of molecular biology had penetrated the high school curriculum. For example, my daughter in a high school biology course was expected to know that certain kinds of radiation are known to cause thymine to pair with another thymine and that this would result in a new sequence in DNA, mRNA (messenger RNA) and tRNA (transfer RNA).

With the astonishing rapidity of the advances in our understanding of the chemistry of life we are presently faced with the perplexing problem of identifying strengths and weaknesses in the background of entering medical students whose xperiences have been so varied so as to make a typical lecture or laboratory in iochemistry either a dreadful bore, too patronizing or completely confusing and ysterious.

Last year while lecturing to first year medical students on thermodynamic ts of tertiary protein structure I was surprised to learn that some students re not acquainted with the term "entropy". In contrast to this, one student, ed with my development of thermodynamic concepts, came up after the lecture and said quite frankly that he had really expected a much more sophisticated presentation.

In 1967 at Tufts University School of Medicine we began experimenting with a placement examination in biochemistry in collaboration with the national board and with Ezra V. Saul, Director of the Office on Educational Organization and innovation at Tufts.

At first we doubted whether the standard National Board examination in Biochemistry was appropriate. This examination is usually taken by medical students after two years of medical school. It is quite clear that many topics covered for the first time in a typical medical biochemistry course are reinforced later in microbiology, pathology, physiology and pharmacology. Many of the National Board questions are so medically oriented that a student coming from a general undergraduate course in biochemistry can be at a loss in facing such a technical examination.

For this reason a limited analysis was undertaken by four of our instructors in the Biochemistry Department at Tufts to determine if possible the usefulness of the National Board questions for a placement examination.

The instructors were shown the examination questions before seeing the Tufts results and asked to indicate which items were considered (1) important but not taught at Tufts, (2) important and taught at Tufts, and (3) not important. Three out of four instructors agreed that 111 items out of 160 National Board items were important and taught. We therefore decided to use the standard National Board examination for placement.

As a base line we wanted to know how well our students would do in the placement examination after taking our regular biochemistry course. Most of these preliminary considerations were at the center of our thoughts in the Spring of 1968. The class of '71 had already taken our course in the Fall of 1967. Since these students were in the midst of their physiology and neuroscience courses we considered it an imposition to ask them to refresh their memories for a tough biochemistry exam on top of everything else.

We began to have serious doubts about the design of the whole experiment. Students usually study for the National Board exams at the end of two years of Medical School. If we used a typical National Board examination how should we interpret the scaled mean score available to us for comparison with the performance of our students who would take the test without studying? We decided as a very practical consideration that we could not ask our medical students to study for a biochemistry examination in the midst of their other studies. We weren't sure how many of our students would agree to take the test anyway. We recommended that no review should be undertaken by students who had taken our course and that this would also apply to the entering class next year.

Part I of the Standard National Board examination in biochemistry was given to all first year students (class of '71) at the conclusion of the biochemistry course. The same examination was repeated for the first year students the following year (class of '72) before and after our biochemistry course. Entering students were specifically instructed not to study for the placement examination. The identical examination was used in all cases.

In summary we now have information on how well two classes of students performed after taking our biochemistry course and also in the case of one class, how well they did before and after taking our course. This is shown in Table 1.

TABLE 1

	Mean	% Pass
Regular NB candidates (after 2 years of medical school)	80.6	86.9
Class of '71 (post-course 6 months later)	71.1	31.1
Class of '72 (pre-course)	59.9	3.3
Class of '72 (post-course, 2 months later)	74.5	62.0

The class of '72 did much better than the class of '71 after taking our course (62% passed vs. 31.1%). However, two factors must be considered. The class of '72 had practice. They had taken the identical exam 5 months earlier; whereas the class of '71 had not taken a pre-course examination. The class of '72 took the examination within two months after the Tufts biochemistry course, whereas in the case of the class of '71 six months of decay of retention had occurred. The students had been specifically instructed not to study for the examination or to refresh their memory of course content.

We know from previous experience that Tufts students after two years of medical school usually score above the national mean on Part I National Board biochemistry, yet 6 months after taking our course only 31.1% passed. This supports a well-known belief that a major amount of biochemical information is not retained after 6 months but can be refreshed and reinforced during the first two years of medical school. Important biochemical concepts are also presented in courses other than in the standard biochemistry program. It must be emphasized that most students study intensively for National Board exams.

These considerations point up the problem of how much an entering medical student should be expected to know in a placement examination.

I made an item-by-item analysis of the results of the pre-course examination taken by entering Tufts medical students, class of '72. To my amazement only 3 items out of 153 questions were answered correctly by 75% of the entering students. (1) They knew what isotopes were. (2) They knew that DNA was replicated by a semi-conservative mechanism. (3) They knew that the mitochondria contained the enzymes of the tricarboxylic acid cycle.

It is interesting to note that only 46 out of 153 items of this same exam were correctly answered by 75% of the students country-wide after two years of medical school. Thus, less than 1/3 of the content of the National Board questions is common knowledge: defined as known by 75% of the students country-wide.

As of February of 1969, 5 medical schools (The University of Chicago, New Jersey State, Tufts, Wayne State, and Southern California) had administered the National Board Biochemistry exam to entering class students and had moved very conservatively in exempting students from biochemistry. Out of 471 students at these schools, 34 students were channeled into special curriculum experiences.

At Tufts six students who had scaled scores of 73 or above [mean score for regular second year medical students, 80.6] out of 121 who took the exam were told that they would be automatically given a satisfactory grade and did nothing more. Four students elected to take an advanced graduate-level course in biochemistry with the incentive of possible Honors; one of these students also became involved in laboratory research and was awarded Honors. One student decided to take the standard biochemistry course and ended up with a satisfactory performance compared with outstanding records of many other students who had not done as well.in the placement examination.

One of the students with an excellent undergraduate background in biochemistry at MIT did remarkably well in the precourse placement examination but was dissatisfied with the advanced course because it entailed relearning virtually all of the material in the regular medical biochemistry course as well as learning new material. I believe he had a valid point. One of the most troublesome aspects of developing a good advanced program is to present rational options to the student who passes a placement examination.

Conclusions

1. A placement examination in biochemistry is necessary for entering medical students in view of their different backgrounds.

2. Since the decay of knowledge is a reality that cannot be ignored the placement examinations should not be taken without a prior period of review.

3. The placement examination should test for a basic knowledge of cell biochemistry in the broadest sense. It should not be medically oriented. A core of general biochemical knowledge should be the essence of a placement examination. The student who passes such an examination still faces the important task of relating fundamental biochemical knowledge to specific problems of human health and disease. These relationships should be consciously reinforced throughout medical education. Basic aspects of biochemistry become more meaningful and relevant as the medical student's education begins to encompass broader areas of experience. For this reason the medical student should not be required to learn all of medical biochemistry during the first phase of his medical education.

This implies that the role of biochemistry and cell biology at a medical school should be biphasic. The first phase relates to broad concepts of molecular biology and should stress basic aspects of cell structure and function. Although this information will eventually become the common knowledge of most entering students, it should not become a requirement for entrance to medical school.

The second phase emphasizes specific medical aspects of human biochemistry. Students who are qualified either by passing the placement examination, which emphasizes molecular and cell biology, or those who take the first year course after entering medical school can go on to the second phase.

Specific Suggestions

The entering medical student who has taken a basic biochemistry course at any time during his undergraduate career should be provided with a review program whose main object would be to refresh his knowledge of basic aspects of cell biology and biochemistry. No more than two weeks should be required for this review followed by a placement examination.

Qualified students would be excused from the regular biochemistry course available to those students who have not taken biochemistry during their undergraduate days.

The regular biochemistry course should stress basic aspects of cell structure and function. The student would be prepared to apply basic biochemical knowledge where relevant to the endless variety of situations that arise in health and disease involving metabolism, physiological control mechanisms, pharmacology, nutrition, genetics, addiction, etc.

EARLY ACCEPTANCE INTO MEDICAL SCHOOL -
Past experiences and thoughts for the future

Allen Lein, Ph.D.

As a part of this afternoon's discussions on accelerated medical programs, I have been asked by Dr. Simon to talk briefly about a particular program with which I was associated for several years at Northwestern University Medical School. This program, known formally as The Honors Program in Medical Education, or more commonly as Northwestern's 6-year or early acceptance program, was planned largely as a result of the deliberations of a curriculum committee and the ultimate identification of certain educational problems which could not be solved simply by modification of the medical curriculum. For example, the committee recognized that premedical as well as medical programs were failing to respond adequately to progressive changes in high school and college curricula. The usurpation by secondary schools of programs which had formerly been the province of colleges became evident as did the failure of the medical school to recognize that the colleges had developed areas of instruction which had traditionally been part of the medical school curriculum. The increasing importance of the physical sciences and of mathematics to the understanding of biological systems was recognized as was the importance of the social sciences to the practice of medicine. The discontinuity created by the division of the total academic experience into a premedical and a medical component was recognized, and finally the committee was impressed anew by the inordinate length of the educational process required for the training of a physician.

The delineation of these problems and others led Northwestern University to appoint a committee on medical education with committee members drawn from the medical school, the graduate school, and the college of Arts and Sciences. During the course of this committee's deliberation, evidence was being accumulated by the National Merit Corporation to suggest that medicine was not attracting its share of the country's most capable high school graduates. For this reason and others the committee decided to concentrate its efforts on a program which would involve the most promising high school graduates available. Accordingly, the program which was finally developed and implemented in 1961 provided for the careful selection annually of 25 to 30 high school seniors who had already demonstrated unusual ability and who were then accepted into Northwestern's College of Arts and Sciences and into the Medical School. A 6-year program was devised, the first two years of which were offered principally in the College of Arts and Sciences while the last four years were given in the Medical School. For the first two years, three special science courses were developed; these were a two year sequence in Chemistry which included one year of physical chemistry, a special one year course in Biology which included elective opportunities, and finally a specially designed course which combined Math and Physics. Some training in the Calculus became a requirement for admission into the program. The science courses were required of all the students and took about one-half of the student's scheduled me. For the remainder of their time the students were permitted to select any courses which the University had to offer and for which the students possessed the necessary qualifications or prerequisities. They were encouraged to take advanced courses in the humanities and social sciences.

In anticipation of receiving the students at the Medical School proper, the traditional medical curriculum at Northwestern was thoroughly reexamined and ultimately modified to include a multi-disciplinary approach during most of the first year and to provide for increased unscheduled time within the curriculum.

Recognizing that the two-years in the College of Arts and Sciences might provide inadequate time for studies in the humanities and in the social sciences, special seminar courses in these areas were developed for the last four years of the program and made a requirement for Honors students.

As you might suspect, the Honors Program was not problem free. Some of the problems resulted from the fact that the medical school at Northwestern, located in Chicago, is about 12 or 14 miles away from the College of Arts and Sciences in Evanston. This geographic separation represented an insurmountable barrier to the integration of the premedical and medical components of the six year program although a number of devices were employed to assist the students in relating to medicine and to the medical school during those first two years. The curriculum during those first years turned out to be the most difficult and most challenging offered in the College of Arts and Sciences. The special science courses produced unforeseen benefits to the various departments involved, particularly to the ultimate development of their own curricula. However, a problem arose for the students in the Honors Program because, in spite of assurances that, short of failing a course, their grades or class rank were of no particular concern or importance, some of them regarded any grade less than an A as defeat - and the acceptance of defeat for the first time was not easy.

The Honors Program is now in its eighth year at Northwestern University, and in spite of some problems, has been judged to be enormously successful. It is no longer considered to be an experiment but an ongoing part of the University's program. The Honors students have distinguished themselves in the medical school; the graduates have obtained excellent internships; and a number of them have elected to take extra years of research training in preparation for academic careers. Certainly then, the Honors Program has succeeded in bringing particularly capable students into medicine, and it has succeeded in reducing the time committment by two years without a reduction in quality.

Thus, the Honors Program solved some of the problems identified by the committee and by medical educators in general. Other problems remain unsolved, and in the meantime new problems have been identified. Among the new problems is that considered in this morning's meetings, the problem of bringing into the medical school students from racial minority groups and providing for them suitable educational programs. Although an early acceptance plan by no means presents a panacea, I suggest that it may provide a mechanism for at least a partial solution to this old but all too recently identified problem. More explicitly, I suggest that a program built on the general plan developed at Northwestern University but expanded to include students from racial minority groups may provide advantages not available in many of the programs under current consideration or implementation. First, such a program reaches back further into the educational experience of the student thereby providing for greater flexibility in devising individual programs and reducing or eliminating the need for subsequent remedial teaching and learning. The security of a virtually guaranteed place in a medical class represents an enormous comfort to the student and permits him to elect a program without the need to consider what grades he might obtain and what consequent impact this may have on his ultimate admission into medical school. In spite of its common identification as a six year program, the Honors students at Northwestern are permitted and sometimes asked to spend additional years in the College of Arts and Sciences. Six years represents a minimum - and this is an important issue. We now need a variable time program in which students can progress from high school to the M.D. degree in accordance with their own individual backgrounds, abilities, and inclinations. Such a program could and probably should include students of the kind brought into the Northwestern program as well as students from relatively poor high schools and from disadvantaged segments of the community. It would then be identified simply as a variable speed integrated premedical-medical program, not a remedial program with low or questionable standards - simply a special program for special students.

DISCUSSION

ADVANCED PLACEMENT - ACCELERATION

Panelists:	James Bartlett, M.D. Morris Friedkin, M.D. William Hexter, Ph.D. Allen Lein, Ph.D.
Moderator:	Harold J. Simon, M.D.

DR. SIMON:

Allen, how was the program funded?

DR. LEIN:*

That's a very important question, because it was a very expensive program. Most of the expenses went into the hiring of special faculty to provide special courses.

Part of the program was funded by the Markel Foundation, and the implementation was quite generously supported by the Commonwealth Fund. I would guess the program expenses in the course of the first six or seven years amounted to approximately three-quarters of a million dollars.

Did you want the answer to another question?

DR. SIMON:

Can you discuss the attrition rate?

DR. LEIN:

The attrition has been approximately 15 percent. I would guess that about half the losses were due to scholastic reasons. The pace during the first two years is remarkably fast. These students, however, were very carefully counseled. Most of the dropouts went into more traditional premedical programs, performed very well, and then went into other medical schools. So they were not lost either to higher education, or to the medical field. Some of them,

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bout half of the 15 percent loss, simply changed their minds about medicine as a career. Consequently, the program provided top-notch students for the Chemistry Department, Physics Department, Math, and so on.

DR. GREEN:

Do you mean 15 percent a year, or 15 percent over the entire program?

DR. LEIN:

Both - let me take that back. The attrition rate the first year was somewhat greater than 15 percent, and it went down slowly over the first three or four years, averaging about 15 percent a year, perhaps a little less.

DR. HAMBURGER:*

I did a little quick arithmetic, and I came out with an average of $5,000 per student per year. This means $30,000 to get a student from high school to an M. D. Degree. How does that compare with Northwesten's regular program?

DR. LEIN:

I don't know. (Laughter) I just can't tell you.

R. SIMON:

Dr. Bartlett, do you want to start the general discussion?

DR. BARTLETT:

The presentations of both Dr. Friedkin and Dr. Lein have been very informative and helpful. I would like to comment on both of them, particularly on Dr. Friedkin's since this is an area in which I have been interested also.

If the relationships between medical schools and colleges were a simple matter, we would not be having such an intimate conference in such a lovely setting. But the fact is that there is a great big gap between the medical schools and colleges - in spite of the fact that all of us have lived in that gap and tried to bridge it.

The title of this conference speaks of the articulation between medical schools and colleges. Both of these papers are pertinent to this, yet Dr. Friedkin's has been titled "A Step Towards Acceleration". It is more importantly a step towards articulation between the colleges and those many medical schools without six-year programs and without the continuity that can occur when a

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university decides to take on its own students from entrance into college through the M.D. degree.

Most of you are from traditional liberal arts or other colleges, universities, and medical schools. If you are in a college, you are accustomed to seeing your students go all over the country to different medical schools. Almost all medical schools have an experience similar to Rochester where about 50 colleges are represented in our incoming class of 75 medical students.

How are we going to bridge this gap, let alone accelerate education? What are we doing to cut down on the discontinuity between college and medical school, or at least to gain whatever advantage can be obtained from discontinuity?

Dr. Friedkin speaks of his experience with a qualifying examination. That may have been the fundamental purpose of it, but we ought to look further into it and think of its potential usefulness for different kinds of special placement. Are we trying to certify, or educate, or differentiate a student? Certification is what the National Board was originally set up to do, to say yea or nay for licensure. That function would resemble qualifying, for instance, "Yes, you do have to take biochemistry", or "No, you don't have to take biochemistry". That is one question, but there are other important questions, too.

Nowadays, students entering medical school are so diversified that they ave to be evaluated individually. Some have had most of the Medical biochemistry that we teach in medical school. Some are strong only in particular areas within the core of biochemistry for example, thermodynamics or carbohydrates, with weakness in other areas, and some have had next to no biochemistry; biochemistry has become a word in college catalogs used so generally as to lack any common meaning or content, somewhat as psychology or sociology in the past.

We are trying to develop some way of differentiating and of learning more about each student as he comes in to medical school. We want to know about his weaknesses, we want to know about his special experiences not only in "core", but in special areas also. We want to know not only the facts a student can put together in biochemistry, but the kinds of thought processes he uses, and what he does know about the nature of things.

There are a wealth of problems facing the student entering medical school. All of you who have done it know what a tremendous shock that first semester of medical school is apt to be, and I do not see that it is getting any less so. In spite of all of our efforts at articulation, the shock gets worse, if anything, and the problems get more severe each year.

As students get more diverse, as we bring in more people from the multiple levels of biochemistry, and from the multiple levels of society, we have got to find better ways of rapidly placing and differentiating our students. Most medical schools do a pretty good job of this. Still, some students leave by the time the first semester is over, more commonly later at the end of the first or second year - leave bored, or overwhelmed, or both. This is where we can use r. Friedkin's plan: To make the education fit the individual, and to use the school's resources in the most efficient and effective way.

There is an urgent role for the premedical advisor in the practise of special placement in a medical school. If I can caricature for a moment, you fellows are working very hard to pull together, before the summer break, all the material on your Juniors, to get all the information in hand, and to get the first draft of your committee letter done before you go off on vacation in order to get it out early in the fall when the medical schools will be dogging you for the letter. Then, when you get the people to apply, and the applications in, and some of your students are accepted, you can stop worrying, or at least start the cycle over again with the next year's group. Now, to caricature the medical schools' responses: Once a student is accepted in October, medical schools stop looking at him unless he flunks organic chemistry or something horrendous like that. We do not pay too much attention to what he does in that Senior year.

If the gap between college and medical school is to be bridged, we have got to do some things differently. The fourth year at college is truly a culminating year, as Dr. Severinghaus has so often said in his earlier presentations. To build on a four-year college education, on the specialization and the special work and the advanced opportunities the colleges now offer, medical schools will have to pay more attention to what happens in the Senior year of college.

All of us must, as faculties, find out what happens to the student, how he flourished and developed during the Senior year, and then determine what nique talents he brings to medical school. Premedical advisors will have to play additional roles in helping the medical school faculty get the knowledge about the individual students in order to do this.

Testing is only one part of it. It is a fairly quick, a fairly standard way of getting some information from the student to the faculty member in that particular medical school as to how the student is doing. The National Board has been a very useful way of starting this, and the schools that have done this have helped a great deal in developing a new device.

There is some questions as to whether the National Board examination is a suitable instrument, and also some question as to whether the method of scoring these examinations back in Philadelphia and then sending the gross score on the students to the medical school makes it the most flexible instrument for the medical school to use.

The Association of American Medical Colleges is now trying to develop a test that can be put into the hands of individual medical schools, to evaluate knowledge and background in biochemistry. This test not only looks forward into medical school Biochemistry, but tries to sample judiciously the background in chemistry as well, so that placement can be individualized on a broad spectrum of chemical knowledge.

Medical schools should certainly keep this testing out of the rat race of admissions, and be sure that placement tests play no role in whether or not a student gets into medical school. Testing and placement should be part of medical school education and not a part of MCAT testing, or of getting into medical school.

Finally, we must recognize that there are many conservative forces in most medical schools. I do not mean political, although there is some of this too. This conservatism may make it difficult to initiate change. I will particularly point to the fact that some of these conservative forces rest with the students - many with the faculty, but some with the students. Both parts of the conservatism must be examined as we try to diversify and to break up the block of problems in the first year of medical school. We are accustomed to faculty inertia, but often do not recognize how many students require much encouragement to take advantage of new opportunities in medical school. It is not easy for a student to have the confidence to accept a judgment that he can be relieved of the routine medical school course in biochemistry, or step into a special honors or elective section in Biochemistry. Many students will fall back on the "safe" choice, to do what everyone else is doing and even supress the fact of their extra knowledge in order to be sure to be at the head of a class, without letting it be known that the required work has already been mastered. A student needs individual counsel and understanding to engage freely and fully in the medical curriculum.

I hope this lengthy discussion will stimulate others and leave some time for them to comment on these two important contributions.

DR. HEXTER*

I heard Dr. Lein's description of his program, and I would like to make personal observation. I'm from a liberal arts college not connected with a medical school, not connected with an accelerated program, but essentially a traditional four-year school.

As I understood it, one of the hopes of the six-year program was to provide a liberal education, as well as to provide the pre-medical training to get acceptance to medical school. I am a little bit concerned about the fact that the program may be operating at cross purposes. As I understood it, the contacts of the medical students in the six-year program with other students in the liberal arts courses were limited pretty much to the first year, at least as I understood the seminars. Explain it to me a little more, if I'm wrong. I will argue that the Junior and Senior years are critical for a college student. That is when he needs a greater security, a greater understanding of what's going on around him, and is the time for his greatest interaction with other people of all kinds in the liberal arts school. I would be a little worried that these six-year students are being removed from the main stream of education which I think is so very important.

I would also like to comment on some of the things Jim Bartlett says. It is, I am sure, a terribly difficult task for the medical schools to have to evaluate applicants coming from the many different colleges in the country.

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*Dr. William M. Hexter
hairman, Premedical Committee
mherst College
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Then, having made that evaluation, you have to educate them more or less individually because of their many different backgrounds. However, I hope that we will all resist any kind of attempt to standardize the premedical program. I think one of the strengths of American education is its very diversity in spite of the difficulties it presents.

DR. SIMON:

Would any of you gentlemen like to take up the baton? Dr. Lein, you were the last one to be challenged.

DR. LEIN:

First of all, with regard to Dr. Bartlett's comments concerning the problem of identification which the students might experience, I must say that we did not experience that problem in the Northwestern program. In fact, it was just the reverse. These students, even while they were on the campus of the College of Arts and Sciences, were identified as special medical students. They were not only tolerated, they were especially welcomed into the non-science courses which they elected to take. The reputation of these students spread very rapidly through the campus. They were known to be particularly capable, and an asset to almost any class. Members of the faculty in the Departments of English, Sociology, Anthorpology, Music, Arts, or whatever, always were rather pleased when one of the Honor Program students enrolled in their classes. I don't think they felt isolated, lost, or abandoned. I think, on the contrary, they felt that they were particularly welcome.

I feel somewhat vulnerable with regard to Dr. Hexter's comments. I think it would be naive to attempt to say, or even to hope, that one can accomplish in two years on a liberal arts campus what is usually accomplished in four years of college. Certainly, one of the continuing criticisms of the six-year program has been that we may be short-changing these students who may be the most likely to profit from a good college education, in that they are having theirs cut in half. This is a commonly heard criticism.

Personally, I don't think it's quite as devastating as it may appear to be on the surface. In the first place, most of the students who come into these programs gain advanced placement in the courses. They end up, at the end of two years, taking upper division courses, Junior and Senior courses, even though they are only Sophomores.

In addition, I don't think I would run down the special seminars given at the medical school. I think that these have been particularly successful. I think I would want to insist that medical students - during their Sophomore, Junior, and Senior years - are even more mature than they were when they were Seniors in college, and are better able to profit from exposure to humanities courses and faculty than they might have been while they were undergraduates.

Also, I think the nature of the courses given was quite different. Ordinarily, at a place like Northwestern, humanities courses are presented in a large lecture program where a student may be sitting in a lecture hall with two or three hundred others, listening to the professor talk for an hour three times a week. In these particular courses, we held the enrollment down to usually no more than 20 to 25. When the professors asked us, "What shall I teach?" our response always was, "Teach whatever happens to interest you the most at the moment." The faculty very frankly used the students as a kind of sounding board for new ideas, fresh ideas, modern ideas, in their own field. I think that this kind of experience is probably worth more than a single humanities course given in the traditional pattern. I think that it is true, however, that the students haven't had the social contact with other students in the College of Arts and Science that they might have had if they had remained on the campus for four years.

DR. SIMON:

Dr. Friedkin, do you wish to reply?

DR. FRIEDKIN:

I still feel that, whether you call it placement or qualifying examination, you have to take cognizance of the fact that we are facing a heterogeneous population of students. In opening up a more flexible curriculum with electives you must have some way of assessing a student at the outset.

After many years of teaching in the environment of a Department of Pharmacology, I moved to biochemistry. It has been interesting to compare the attitude of students in pharmacology and biochemistry courses.

In pharmacology, we never had major trouble with disinterested students. Everything was very relevant. You talk about penicillin, you talk about the possible side effects of barbiturates, the students all listen - there is no question about relevance. But in biochemistry the situation is quite different. Often the student does not know what you are aiming at, and I think this is part of the problem when students argue for "relevance" in course material.

How much biochemistry is enough? Well, how much biochemistry is enough for a psychiatrist or someone in internal medicine? In the larger sense, what aspects of medicine are proper for the psychiatrist, or for the surgeon? You get into the whole problem of what should be the core of medical education for the various specialties, and of course we are all very sensitive about that.

I think a major difficulty is that biochemistry is a language. As the language is being learned it cannot be immediately applied to every situation in medicine. You have to start somewhere with basic elements of the language. More and more undergraduate students are taking biochemistry courses, and arriving at medical school with a good background. Perhaps, within a decade, most students will have this by the time they enter medical school.

Now, we get to the situation of the disadvantaged student. Unless we do have some very special programs that prepare him appropriately, he will have to learn the language of biochemistry from the beginning, and it is a tough language.

I tutored a disadvantaged medical student last year. Previous to his coming to Tufts he was involved as an assistant in a medical care program at Mt. Bayou, Mississippi. There he became interested in various genetic abnormalties related to sickle cell anemia. Later, as a student in biochemistry at Tufts, he could see some point in learning the structure of hemoglobin. His previous experience made this aspect of biochemistry very relevant. Unfortunately we cannot couple experience to biochemistry in all areas of this discipline.

DR. PAGE:

As you know from the studies of a few years ago, it became apparent that more and more students are taking biochemistry. Forty-two percent of them had a course of something at least called biochemistry.

I am a little disturbed, however, by one fact that was mentioned by Dr. Friedkin - that only 1/3 of the material in biochemistry is common knowledge. That disturbs me. If this is the only common knowledge there is, maybe we ought to just teach that part and forget the rest of it.

There is another pertinent observation. If you go back in history, it was not too long ago that organic chemistry was taught in medical schools. It seems to me that, gradually, the basic science courses are being taught more and more at the college level. We will probably be teaching less of it as it [illegible] now taught in medical schools. This will be a material change. In fact, it would be my prediction that biochemistry, or some form of it, would be a prerequisite for medical schools as is the case with organic chemistry today.

In approaching the problems of the disadvantaged, we are going to have to have some remedial processes to teach them the various scientific languages. I don't speak the biochemistry so good myself. But the courses are getting more and more integrated, and it's going to be harder and harder to separate them.

DR. HEXTER:

I was going to comment on this question, but you anticipated me, in part. There is a possible danger in biochemistry becoming a prerequisite. As long as it's possible for the students to take an advanced course in college, they will take it in college, in order to anticipate their later education. I think very much of this sort of thing would be undesirable.

I would like to get the answer to a question. When the premedical students ask their advisor whether it would be better to take biochemistry, or physical chemistry, or social sciences, what would be your answer at this time?

DR. GROBSTEIN:

To take humanities and social sciences in the undergraduate years. I hope that medical school curricula will be flexible enough to allow this kind of training in medical school as well, but students should take these courses in undergraduate school wherever possible. I think it makes sense to have biochemistry before entry into medical school, if possible, but I think it would be unfortunate to increase further the course requirements for admission.

QUESTION:

What about the choice between physical chemistry and biochemistry at the undergraduate level?

DR. GROBSTEIN:

A lot of emphasis already has been put on biochemistry in undergraduate curricula, but physical chemistry is becoming more and more important in our understanding of biological processes and structure. The choice is an individual one.

QUESTION:

So you would recommend that premeds take physical chemistry.

DR. BARTLETT:

The big problem is how to separate an undergraduate's choice between physical chemistry and biochemistry from the rat race of getting into medical school. At least idealistically a student would make the choice between biochemistry and physical chemistry on the basis of the strength of the course offered at his college, and its relevance to his own particular interests and career plan, and not on the basis of whether or not he thought it would look like a grood bribe to a medical school Admissions Committee or to his college Advisory Committee. I am not arguing for general placement - that is, for every good student to be generally placed ahead in biochemistry - but rather _for special placement of individual students after they have been admitted to medical school_.

Whether or not a student should have a course labeled "Biochemistry" depends on his interest, the advice you give him, and particularly whether or not it is a well taught course in that college which is different from the student's experience in other courses. If the college course is repetitious of what he may have had, say, in organic chemistry or cell physiology, the student may well be wasting time.

DR. SWANSON:

I think one of the things medical schools will increasingly experience through the coming years, and we have already seen it, is the joint attendance at medical school seminars by medical students and graduate students, with the latter gradually predominating. Biochemistry is a problem in a course of that nature, where you may have 200 plus students, and it becomes a course that takes no recognition of the differences between medical students and graduate students. This is one of the problems - that loss of recognition. I am ally frightened at the thought of having biochemistry become a part of premedical requirements. This needs to be understood by everyone in the graduate departments. We need to recognize that people who go to medical school do need an understanding of biochemistry, but in a different way from graduate students.

DR. SIMON:

Would any of the students care to comment on anything that has transpired thus far?

MR. MENDOZA:

There is much overlapping, I am convinced, between physical chemistry and organic chemistry. More and more students are trying to take both along with physiology and psychology, where there are also overlaps. I don't think we have the right text books yet, but I think these overlaps can and will be eliminated in time. I think we do need more humanities courses.

MR. JESSEE:*

I would like to agree with some of what has been said. There has been a lot of talk about the fact that there is a shift downward into undergraduate education to anticipate subjects taught in medical schools. This ties in closely with what Dr. Lein has said about the accelerated program designed to ing an individual from high school to the M.D. Degree along an educational continuum. Better counselling and planning should provide time for students to become well rounded. It seems very practical to me that a six-year or seven-year program from high school to the M.D. need not be a straight science program, and could turn out a well rounded and educated person.

I would also like to mention the emphasis on departmental autonomy which seems often to be a stumbling block to curricular changes. I recently attended the First Student Conference on Medical Education, at which there were some 250 to 300 students in attendance, meeting in groups of about 20 each. Each group seemed to arrive at the same conclusion: that more flexibility in curricula is necessary, and departmental autonomy stands in the way. Flexibility is being demanded by the students and I urge you to prepare for it.

DR. RUMBAUGH:**

We have been talking about what the curriculum should be in premedical school and the assumption has been that students get the M.D. degree at the end of the Senior year; that they have arrived, and that that's the end. You must realize that most medical school graduates do post-graduate work and engage in

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continuing education process, whether they specialize or not. The goal of a well-rounded individual at the end of the Senior year of college, or of medical school cannot be reached in this day and age. The concept of continuum gives us more flexibility, and needs to be worked out and increased at both ends of the undergraduate medical curriculum.

SPECIAL PROGRAMS - CURRICULUM AND FLEXIBILITY

THE STANFORD "ELECTIVE" CURRICULUM

Bernard W. Nelson, M.D.

The M.D. Program at Stanford University

The curriculum of a medical school is the expression of an attempt by the faculty of an institution to order the vast body of knowledge applicable to an understanding of medicine. As such, a curriculum reflects the strengths and weaknesses of the institution and the manner in which the faculty believe that the training of physicians can be best achieved. In recent years, medical school curricula have become increasingly complex as both students and faculty have grappled with the problem of ordering an ever increasing body of knowledge. Many attempts have been directed toward finding means to take advantage of the superior preparation of entering students, to integrate the various science disciplines, to avoid redundancy in teaching programs, and to provide the student with a framework within which he might order his learning of the vast body of knowledge available for use by today's physician. It is implicit in most medical school curricula that there is a "core" body of knowledge essential to the training of the physician. What I will describe today is an educational plan that makes no direct reference to a "core".

The educational plan of students in the M.D. Program at Stanford which was implemented in September of 1968 is a modification of the Stanford Plan of Medical Education intorduced in 1959. The Stanford Plan was characterized by its length - five years - and by the liberal provision for free time. The format of this Plan is as follows:

Stanford Plan of Medical Education

	Year I	Year II	Year III	Year IV					Year V		
a.m.	FREE TIME	BASIC SCIENCE COURSES	BASIC SCIENCE COURSES	MEDICAL CLERKSHIP	SURGICAL	CHILD HEALTH	PSYCHIATRY	FREE TIME	AMBULATORY MEDICINE	OB-GYN ANESTHESIA	FREE TIME
p.m.	BASIC SCIENCE COURSES	FREE TIME	FREE TIME						FREE TIME		
	Preclinical Years			Clinical Years							

During the first three years of study, the student was obligated to take course work for one half of each day, the other half of the day was free. I want to emphasize that the student was not restricted in the manner in which he used this free time. Many engaged in independent research, took courses on the University campus, or participated in community work. There was a clear demarcation between the basic science and clinical years, highlighted by the taking of the Part I National Board Examination at the end of the third year, prior to the student's beginning his first full-time clinical experience. During the final two years the student took traditional department-run, ward-based clerkships. The free time provided an opportunity for the student to take elective offerings in specialized disciplines in the outpatient clinics of the Medical School or affiliated institutions. The required basic science courses and clinical clerkships were considered to define the minimal body of knowledge essential to the education of a medical student.

During the operation of the Stanford Plan of Medical Education, there were few substantive changes in the curriculum. Responsibility for curricular evaluation and modification rested with a Curriculum Committee appointed by the Dean and composed of representatives from each of the departments and teaching groups. In part, it was the responsibility of the department representative to lobby for the most advantageous arrangements for his department. The large size of the Committee and the defensive posture assumed by its members with regard to their departments' course offerings in the "core" block of studies established a conservative committee structure that inhibited major curricular revisions. New disciplines found expression in the curriculum as elective offerings during the "free time"; however, since they were scheduled outside of the "core," they were necessarily established as being of lesser importance to the student. It also became clear that the rigid compartmentalization of the student's day into an obligatory period of class attendance and a corresponding free period restricted the manner in which students took advantage of opportunities at Stanford.

In 1966, Dr. Glaser, Dean of the Medical School, discharged the Curriculum Committee and appointed a seven-man Committee on Medical Education, charged with the responsibility of reviewing the Stanford Plan of Medical Education and formulating matters of educational policy for the School. The Committee immediately recognized a significant degree of discontent with the Stanford Plan in the student body, noting that:

> Opportunities or encouragement for development along individual lines, although explicitly advertised as a feature of the curriculum, were not readily discernable to many students. We could hardly square our ambition of providing a "graduate approach" to medical education with this perception of the curriculum by a significant segment of the student body. It is difficult to avoid the conclusion that insofar as many students are concerned, the promise of the Stanford Plan, although it played a major role in their coming to Stanford, is not being achieved.

The Committee was also aware of faculty discontent with the Stanford Plan. There were differences of opinion among the faculty as to what constituted "core" material and dissatisfaction with the time allocations for courses in the "core" curriculum. The Committee identified as a clear defect of the Stanford Plan the "paucity of alternative pathways for acquiring the knowledge and training needed for the different roles played by today's physicians." The Committee went on to point out:

> We have in effect a single path along which every student, regardless of background, present and future aspirations, must pass to qualify for advancement to the post-graduate level. To be sure, elective and research opportunities permit some flexibility, but they do so only in a disadvantageous, competitive milieu. Too many students find that the demands imposed by required courses...inhibit their undertaking elective opportunities in their free time; and without sufficient demand, otherwise attractive elective offerings must surely be curtailed.

The Committee concluded that it was necessary to formulate a change in educational policy which would insure that each student acquired the skills and essential knowledge needed for the practice of medicine as well as providing considerable flexibility in the manner in which such knowledge would be gained. The Committee also stressed the need to incorporate into the curriculum a mechanism "for continual, gradual innovations responsive to the interests of the faculty and students."

The Committee on Medical Education recommended that the School replace the existing "core" curriculum with an educational plan that did not specify formal course requirements. They suggested a plan in which each student, in consultation w a team of faculty advisors, determines a study plan that permits the student to accomplish his educational goals in the context of his own abilities, needs, and ambitions.

The Committee on Medical Education recommended the establishment of a Committee on Courses and Curriculum (the CCC) to implement this educational plan and oversee its operation. Importantly, the Committee on Medical Education reserved for the departments all their existing prerogatives as to which courses should be offered and the prerequisites that may be expected of the student prior to his registration in the course. Each department was free to offer any course it felt its faculty qualified to teach; it was only necessary that the department notify the Committee on Courses and Curriculum of new course offerings and changes in existing courses. The Report of the Committee on Medical Education detailed the advantages of their proposal:

> Educational research faces grave methodological obstacles in its efforts to demonstrate the superiority of any one approach to medical education. All studies agree, however, on the importance of enthusiastic expectancy and participation as a major ingredient of educational success. A program, like ours, that affords the greatest leeway of individual choice on the part of students and faculty should best elicit that kind of enthusiasm, as well as attract the best qualified students to Stanford....
>
> The proposed process has a built-in facility for evolution: the curriculum is discovered pragmatically rather than designed *a priori*. It will be the outcome of many decisions that take realistic account not only of theoretical *desiderata* but also the practicalities of the quality

> of teaching and the special expertise of our own faculty in various subjects at any given period, as well as to the diversity of the student's interests.
>
> Ineffective teaching will be met by demands for alternative solutions, either by the same or other departments...The optimization of our teaching can then proceed, with many concurrent experiments, without the major convulsive upheavals of a standardized curriculum. Early introduction of clinical experience can be reinforced by concurrent exposure to basic science and relevant basic concepts can be reconsidered later at an advanced level as the student progresses in his study plan. Our program is therefore one of evolution by gradual progressive selection encompassing a variety of parallel educational habitats.

The Committee Report also recognized several potential disadvantages. Clearly, such an educational system would require, if it were to function properly, the development of many small courses. This would require more faculty time and would of necessity be a less efficient means of instructing students. The Committee also appreciated the impact that such a program would have on the individual teaching of faculty members. The enrollment of students in subsequent years would be a measure of the students' appraisal of the course.

The Committee summarized its proposal to the faculty as follows:

> The essential kernel of our proposal is the elimination of the concept of the specific required course and the implication that behind such a course there is a proprietary right that a department will not lightly give up. Instead, we have established as the essential requirements functional criteria, especially the capacity to pass the National Board...Examinations, and leave to small groups of faculty and individual students the greatest possible leeway in designing means to accomplish these criteria. The criteria themselves should be a subject of continuing review by some central faculty body, since we may have been too conservative in our attempt to delineate them at this time. Since we will have removed the major elements of political spoils, it should be a much simpler matter in the future to revise the fundamental functional criteria on a principles basis. For example, the National Board examinations were selected in our functional definition of "core" more as a matter of expediency and convenience, and the fact of their national recognition, than because they necessarily represent the best standard of medical education. We would leave to our successor committees the perfection of these functional criteria as one of our major unfinished tasks.

It is the manner in which the successor committees met the challenge for perfection of the Report of the Committee on Medical Education to which I now turn my attention. Following acceptance of the Report of the Committee on Medical Education by the faculty, the Committee on Courses and Curriculum was c stituted, initially on an interim basis, and subsequently as a permanent committee of the newly established Faculty Senate of the School. In an effort to remove curricular decision-making from the influence of department representatives, the architects of the Faculty Senate provided that the Committee on Courses and Curriculum would be composed of eight faculty, one administration representative, and three students. This was clearly another expression of the dissatisfaction with the preceding committee's functional capability.

The Committee on Courses and Curriculum, with the concurrence of the Faculty Senate, has established the requirements for the M.D. degree at Stanford as follows:

1. Each student must satisfactorily complete 192 quarter units in courses approved for credit toward the M.D. degree. Of these, 64 quarter units must be in clinical clerkships, with 48 in full-time clerkships involving direct patient-care responsibility in clinical services offered by the faculty of the School of Medicine.

2. Each student must obtain a score of 75 or better in each of the subjects of the Part I Examination and an overall score of 75 or better in the Part II Examination of the National Board of Medical Examiners.

3. Each student must pay a minimum of the equivalent of twelve quarters of full tuition. He shall pay fees according to University policy for students in the graduate division.

4. In addition to the above, suitability for the practice of medicine as evidenced by the assumption of responsibility for patient care and integrity in the conduct of clinical and research activities is required for the degree of Doctor of Medicine.

The 192 quarter units are equivalent to the number of hours in the Stanford Plan's five-year "core" curriculum. I cannot stress too strongly the fact that the number of units of work that constitutes the graduation requirement is the minimum experience that a student will have at Stanford.

There is a great diversity of views regarding the emphasis that should be placed on the students gaining a broad range of experience in the clinical disciplines of medicine and on the appropriateness of his early specialization in a discipline of interest. Either option is available to the student at Stanford. Most CCC members favor the students receiving a broad exposure to clinical medicine. The extent to which this is the prevailing view of the faculty will be reflected in the study plans developed by the students. One can not ignore the gentle persuasion toward an exposure to most of the disciplines of clinical medicine that is implied in requiring passage of the Part II ational Board Examination - the single functional criteria identified by the Committee on Courses and Curriculum.

There is an alternative view that believes it is more realistic to consider the practice of medicine specialty-oriented and favors providing dents who do know what specialty they wish to pursue an opportunity to do early in their careers. Accordingly, some CCC members view the present rogram as an opportunity for students to shorten their postgraduate training period by more intensive specialty training while in Medical School. These faculty also view the program as a possible means of incorporating into the clinical years the experience and training that now occurs during the student's internship year.

A student's decision as to what clinical courses he will take, and perhaps more importantly those courses that he will not take, will have to reflect the greatest amount of interaction between the student and his Advisor Team if it is to represent a course of studies that will not prejudice his future clinical training.

The requirement for passage of each subject of the Part I National Board Examination is more rigorous than the requirement set by the National Board. This single functional criteria serves to insure that each student has at least minimal knowledge of the major basic science disciplines; this may be the only evidence since he may have elected not to take course work in one or more of the basic science disciplines. This requirement has created controversy within the CCC and the faculty and student body; the issue debated is whether such a requirement restricts the student's freedom by establishing an unofficial "core" curriculum consisting of the subjects included in the National Board Examination. Most CCC members consider it a minimal requirement that will not significantly restrict the student's choice of course work.

The last two requirements are, I believe, straight-forward.

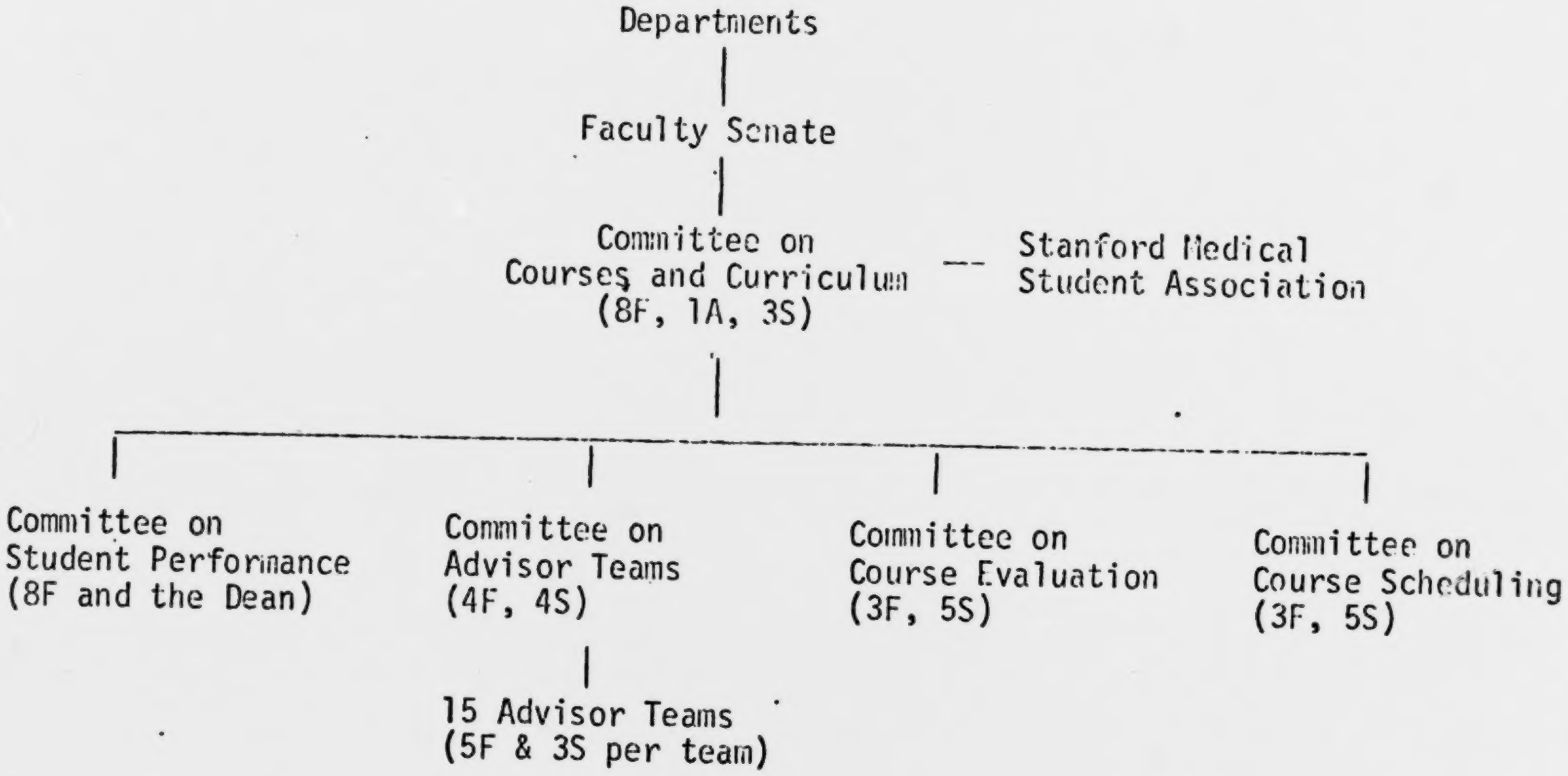
At a minimum students will enroll in the M.D. Program for twelve quarters. However, it is expected that the majority of students will be in residence for five academic years, since it is only in this manner that the student will be able to take full advantage of the opportunity to study disciplines in depth at Stanford.

Successful implementation of this new approach to curricular planning is critically dependent upon the quality and diversity of advice provided the students. It is clear that the CCC can not directly assist each student in planning his program of studies while fulfilling its responsibilities of initiating and sustaining direction for the overall curricular goals of the Medical School. Furthermore, it is clear that the CCC will represent the views of only a few individuals, each with limited expertise and his own prejudiced views of medical education. Consequently, the role of the Advisor Teams is of special significance. Each Advisor Team is composed of five faculty members and three students, and is assigned no more than twenty-five advisees. To insure diversity of advice, the five faculty members on each Advisor Team are chosen from the following five groups of disciplines:

1. Anatomy, pathology, radiology.
2. Biochemistry, genetics, microbiology, pharmacology, physiology.
3. Medicine, pediatrics.
4. Anesthesiology, dermatology, gynecology and obstetrics, surgery.
5. Preventive medicine, psychiatry.

The Advisor Teams function as groups and interaction among advisees is encouraged. It is the responsibility of the Advisor Teams to approve each advisee's course schedule quarter by quarter to insure that the student is progressing satisfactorily toward meeting the graduation requirements and is following a balanced program consonant with his background and career goals.

To facilitate communication among the Advisor Teams and between them and the CCC, and to insure that a single Advisor Team is not prone to propose very aberrant pathways, a subcommittee of the CCC has been established to develop policy for the Advisor Teams. These organizational aspects of the curriculum at Stanford are as follows:


Departments
Faculty Senate
Committee on Courses and Curriculum (8F, 1A, 3S)
Stanford Medical Student Association
Committee on Student Performance (8F and the Dean)
Committee on Advisor Teams (4F, 4S)
15 Advisor Teams (5F & 3S per team)
Committee on Course Evaluation (3F, 5S)
Committee on Course Scheduling (3F, 5S)

F = faculty
A = administration
S = students

The CCC bears the following relationships to the faculty and the departments. The faculty of each department elect their department's representatives to the Faculty Senate. The Senate selects from its membership the eight faculty who serve on the CCC, four of whom are from basic science departments and four of whom are from clinical departments. The three student members of the CCC are elected by the student body. The policies of all of the subcommittees of the CCC are established by the CCC and must be ratified by the Faculty Senate.

The new program has been in effect for one year. The question may be asked: Does it work? The answer is, at this time, necessarily an incomplete one. It is clear that both faculty and students have responded to the program in a conservative fashion. Many of the courses taken by students were part of the old "core" curriculum. There have been several unmistakeable trends - a movement away from laboratory courses and an emphasis on courses that stress the clinical aspects of medicine. Neither of these was unexpected. Entering students have an understanding of laboratory techniques and of the problems associated with the interpretation of experimental results that is far superior to that which was found just a few years ago. Also, students are now seeking more relevance to clinical medicine in their basic science courses. In our experience, an excellent way to stress the importance of the basic sciences is to provide the student an opportunity to see basic science principles applied to clinical problems. The elective curriculum fosters an early exposure to meaningful clinical experiences, which renew the student's interest in understanding the principles taught in his basic science courses.

Several advantages of the new program are clear. It enables the student to move at a pace that is in keeping with his academic preparation prior to matriculation in the Medical School and his stated career goals. It provides a special opportunity for the minority student admitted to the Medical School, whose academic preparation has too often been compromised by a succession of poor schools. The program also permits such a student to compensate for any academic problems that he may incur by the development of a course of studies that will meet his individual needs at his own pace. In addition, the program allows for full participation by the students in the study of areas of interest, be they in investigative research or community health programs. To a limited extent the new program has fostered the development of new course offerings. Several innovations in teaching have occurred, for example, the development of full-time pathology clerkships for students in the preclinical years. It is expected that more experimentation with alternative offerings will occur in the future.

To summarize, the education program in the Medical School is designed to be responsive to the diverse academic preparations and differing career aspirations of students. There is no "core" curriculum. The student, in consultation with his Advisor Team of faculty and students, develops an individualized program of studies. This approach permits students to vary their pace of studies and encourages their participation in the opportunities that exist at Stanford for investigative research, the taking of courses on the University campus, or involvement in community health activities.

CURRICULUM AND FLEXIBILITY

Clifford Grobstein, Ph.D.

This is a day of curriculum change, and one need not begin by emphasizing that curriculum is not a Bible. On the other hand, since we have just heard a curriculum described which is, at least formally, totally elective, one might assume that curriculum itself has now had its day, that we are moving into a new era of curriculumless education. I think that this would be a mistake, both as an assumption and as a direction to take.

We must keep in mind that curriculum is a kind of traffic pattern; its function is to ensure effectiveness of academic exchange between faculty and students. The objective of a curriculum is not to transmit nuggets of knowledge, but to maximize effective interaction between teacher and student. As in the traffic pattern of a major city, concerted and predictable flow along certain areas (freeways), and diversified and unpredictable fluctuating flow in the intermediate directions (avenues and neighborhood streets) must be provided. Most people will tend to use freeways (core courses) even though the law may not require them to do so (required courses); but they will also use avenues (general electives) and neighborhood streets (specialized objectives), depending on their particular objectives.

The business of the traffic engineer (curriculum planner) is to study sting driver preferences (students and faculty) in relation to the structure of the city (knowledge), and to make sure that each can get where he is going along the shortest and most satisfying route. Such an approach to curriculum relegates to triviality controversies over what is core and what is elective, and hopefully minimizes the blood-letting over how many hours each special faculty interest ought to control. It also emphasizes that someone does have to plan and preserve a curricular structure if the educational process is not to become a monumental traffic jam.

What are the special problems for curriculum planning at this time? One may mention four pressures which have created and are prolonging the current curricular ferment. The first to register was the transformation of biology in the past two decades. The birds and bees approach dissolved under the impact of molecular biology, and academic medicine is still trying to capture the implications in its educational operations. The second pressure comes from medicine itself, in response to the social demand for more effective health care without escalating costs. There is abroad the notion - and I share it - that effective health delivery demands altered educational techniques and organization. The third pressure, closely related to the second, is the student revolt which probably has yet to reach its peak in the medical schools. The no-nonsense approach, not to be confused with the no-rules approach, is rattling the skeletons in curricular closets all across the land. Finally, there is the rising minority imperative, particularly the insistence on the values of cultural heterogeneity. Integration which leads to homogenization, as visualized a generation ago, does not require more black or brown doctors. Integration of black, brown, and white power in a culturally heterogeneous community, however, does require more minority doctors, and does force medical schools to become comparably heterogeneous, if they are to meet the nation's need for medical care.

These pressures reduce the embattled issue of core vs electives to sterile play with words. When we talk of flexible core and limited electives, core and elective move toward each other. The real issues are not in these technical questions. They are much more substantive. Are we going to imprint or educate? Do we succeed in our objectives if we double the number of physicians trained to apply the medical knowledge of the mid-twentieth century to the medical problems of the late twentieth and early twenty-first centuries? Are we to return to physicians trained as witch-doctors, or will we continue to expand our training of physician-scientists? Will we produce in our medical schools only one product - the mythical complete physician, the paragon of wisdom and mercy for all occasions - or will we recognize that modern medicine is a diversified profession requiring a complement of members of many different backgrounds and training? Will we train on the assumption that medical knowledge and practice are eternal verities, or will we admit that we do not know what physicians will do or need to know even twenty years from now.

In the face of these issues what is clear is that the lockstep, monolithic medical curriculum of the past was not only incredibly dull, but was ineffective to meet today's diverse and changing needs. Medical schools now require a flexible and diverse curricular pattern, by whatever mechanism it is monitored. But pattern there must be, if hit and miss interaction of faculty and students is not to become confusing and ineffective for all.

At our own institution - like many others - we have been wrestling with these problems for the past several years. We have agreed on a core approach, guided by a faculty committee system to assure that all physician-candidates acquire what is regarded as the minimal essential information and skills. I shall say no more about this because, while it has certain novel features, it is not fundamentally different from what a number of other schools are doing. I should like briefly to describe, however, another aspect of our curriculum which perhaps is a little more novel. This is what we call the Concentration Area program. Its objective is to provide supervised study in a special area chosen according to joint faculty-student interest.

What we have done is to invite the faculty to form small, voluntary, so-called expert groups in such areas as marine medicine, human genetics, or cardio-vascular physiology. The areas are intended to be academic in context rather than clinical, in the narrow sense of clinical specialty. They frequently involve faculty from the general campus as well as from the medical school. Students are expected to choose one of these areas early in their career and to do special study in it under the guidance of the expert group. The study program may include courses, independent study, clinical activity, laboratory or field studies as appropriate to the area. It is hoped that gradually each student will assume a special relationship with an individual faculty member, and that the program will culminate in a synthesizing thesis in which the student demonstrates to the expert group the meaningfulness of his concentration activity.

It will be recognized that the Concentration Area is a kind of hybrid between an undergraduate major and a program of graduate study. How it is classified, however, is less important than whether it succeeds in its objectives - which are to introduce diversity and student initiative within and envelope of close faculty interaction and supervision. Hopefully, faculty nterest will be mobilized because the student is a willing disciple, and student interest will be effectively utilized because it is self-generated. It is still too early to judge the success of the enterprise, but both faculty and students seem to be happy with the early stages.

This is one way to recognize that the business of curriculum is not a one-shot injection of eternal knowledge. Rather, curriculum is the flow pattern of the educational process, a system of interaction between students and an active professional community - busy with patient care, research, community service even as it teaches. The system must emphasize student self-motivation, but it must also provide steady faculty guidance. It must be flexible, but it must recognize the norms. It must afford heterogeneity of training opportunities, while communicating common essentials in the most efficient manner. Every institution must find its own path to these objectives, and will do so if all organizational and administrative arrangements are bent in this direction.

RACIAL MINORITY GROUP STUDENTS AND THEIR SPECIAL EDUCATIONAL NEEDS

Robert G. Page

The title of my topic today does not really reflect the general issue which confronts medical educators in dealing with students of the kind described by the term "racial minority group students". There are many students who come to medical schools faced with problems which are identical with those of racial minority group students. Such students are difficult to sort out unless there is some identifying mark such as skin color. Perhaps the major problem of these students is a slower learning rate than that of other medical students. This relatively low rate of learning has been associated with the cultural background of black students, since they can be easily identified in our society.

I shall address myself to the general problems of students whose families do not give them any kind of intellectual base on which to develop their talents. The identification of this group is most difficult. Usually, they are not admitted to medical schools. If one carefully examined the students who are rejected by medical schools, I suspect that one would find a significant number whose learning potential is great, but who, because of their backgrounds, cannot keep up with their fellow students.

On examination of the United States medical educational system, one is struck by the fact that we have a 4-4-4 system; four years of high school, four years of college, and four years of medical school...a total of twelve years. Back in the 1930's, Robert Hutchins started a new system at the University of Chicago in which students graduated from high schools after eleven years of work, (really compressing the usual twelve years of study into eleven). They could receive a Bachelor's Degree from the University of Chicago in two years and proceed with graduate education of one kind or another. In essence, this saved the student three calendar years. The reason that this experiment in education did not catch on in the United States was due to the fact that this country was not ready for it. Now there is a change in attitude. I believe the variable rate of learning of students will be recognized and accommodated in most educational institutions. If this is done, students could graduate from high school in 3-5 years; they could complete a Bachelor's Degree in 2-4 years; and they could go through medical school in 3-5 years, depending upon their rate of learning ability. Thus, a student could complete medical school in 8-14 years from the time he started high school.

Most of our educational programs even at the medical school level are geared somewhat toward the average or slow learner. This is apparent by the fact that most medical schools graduate 90% of the students who come to them in a four-year period. It is also apparent that those who learn even more slowly than this average slow student will flounder because of the difficulties which they have in keeping up with the rest of their class. The slow learner may well have as distinguished a career after graduation as his peer who learns at a more rapid rate.

I do not know what all of the factors are which lead to variable learning rates. Certainly there are structural changes in the brain which make some individuals learn more slowly than others. Early life malnutrition has recently been indicted as causing mental defficiency in later life. I doubt that this has much affect on higher education, since these students are screened out earlier in their education. In medical schools we deal with individuals whose neuronal hookups are pretty good.

Another factor is the individual's motivation. This is a personal motivation, one which stems from an intense drive and desire on the part of one person to achieve his goals as opposed to another who seems to drift along at a more leisurely pace. The individual who is highly motivated but not so well endowed mentally frequently does better than the individual who is extremely bright but is less motivated. The latter kind of student frequently has difficulty in medical school and drops out.

Another kind of motivation is that which comes from the home or the environment. This is most difficult to measure and has only become important to educators in recent years. The racial minority groups have been separated out for particular attention in recent years and represent a real problem in environmental motivation. The environment of the homes does have an affect on learning and on the ability to take certain kinds of tests. A student who comes from a family or society in which books have not been a part of life, in which curiosity has been stepped upon as an undesirable trait, and in which academic attainment is looked upon with suspicion, has his enthusiasm for intellectual achievement dampened. On the other hand boys and girls coming from culturally deprived backgrounds can be highly motivated by parents who wish them to achieve. We have all seen the children of blue collar workers aspiring to higher education and achieving it. One of my students at the iversity of Chicago came from a family in which his father was a laborer. The mother also worked. Every one of five children had received a college degree beyond the Bachelor's Degree. Obviously this kind of educational opportunity was encouraged in the family and was a strong motivational force for the individual students.

In addition to home influence, the influences of the environment in which the individual lives must play a role. For example, in many situations in Chicago, the city with which I am a little bit more familiar than others, the milieu of the community seemed to make a tremendous difference concerning the desires of the student to do something other than that which everyone else did. For example, the ghetto high school students who were associated with the Chicago Student Summer Health Project in 1967 suddenly found that their educational goals were raised significantly by association with health science students, (mainly nursing and medical students). Many of them had not realized what they could attain until they had had this association.

I would now like to turn my attention to special educational needs of racial minority group students - with the understanding that I am also addressing myself to all students who fall into the category of the culturally or environmentally deprived or those who for some reason are relatively slow learners. I am sure that all of you are aware of the program supported by the Macy Foundation at Haverford College and run by Dean William E. Cadbury, Jr. This program was designed to ncourage Negro students to seek a post-baccalaureate year in order to prepare themselves for medicine. It had many advantages and some disadvantages. I will not describe these in detail but will refer you to a publication of the Josiah Macy Jr. Foundation which summarizes the February 25-27, 1968 conference entitled "Preparation for Medical Education in the Traditionally Negro College - Recruitment - Guidance - Curriculum". Doctor Cadbury wrote an excellent summary of this educational experiment. In essence, the reason for the Post-Baccalaureate Fellowship Program was to increase the number of well trained Negroes in this country who could go to a professional school. It added a year to the student's education and has been successful in that a high percentage of students have gone on to medical schools and other graduate programs. Although this does help the current situation, it will be more important in the long run to improve the education in the colleges from which these students have come so that they would not have to take this extra year. Increased motivation at the high school and college levels is most important.

Another type of program was initiated at Harvard, Yale, and Columbia, and was known as the Intensive Summer Studies Program. During the summer following the junior year in college an attempt was made to identify the graduate potential of individuals who were attending college. The concentration was on writing skills and the basic techniques of analysis and comprehension necessary for graduate study. The report in 1968 by Dr. Harold Stahmer (also in the May report referred to above) indicated that 51% of the students who had participated in this program were working in recognized graduate schools toward a Ph.D., L.L.D., or M.D. Degree. Twelve percent (12%) were working, were married, or were drafted, or entered rminal programs.

One of the more interesting approaches to this problem is the current program at Albert Einstein School of Medicine where a special course has been designed for approximately eight students who are admitted to medical school but who take a special year before starting the regular course of studies (personal conversation with Dr. Joseph French). The selected students have intensive education under the direction of individual faculty members and are personally tutored in all phases of education, including many of the difficult problems which they will face in medical school. The success of this program has been striking, but it is extremely expensive both financially and in faculty time. Although it is an excellent experiment and shows that students who come from deprived backgrounds, whether they be Negro or Spanish American, can in fact meet the demands of medical education, it is too costly and probably impractical because of the required faculty to solve the problems of large numbers of students.

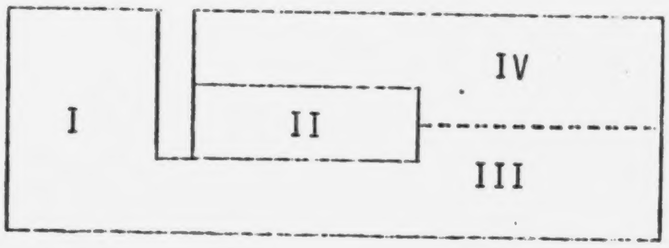
The best answer to this challenging problem will be to improve the education of students before they finish their baccalaureate work. It will be necessary to improve the high schools to which these students go, to initiate a change in attitude in the communities in which they live, and to improve the colleges to which they go upon leaving high school. That is a long term solution.

However, the problem is with us now and we must try to solve it. I would like to propose a model which is somewhat different than those which have been described above and which will allow students to continue their studies through ical schools without a special program which necessarily adds a year between college and medical school. I believe that this model will work in most medical schools today. Certainly with the modified curricula that are being developed it is a possible solution.

A few moments ago I mentioned the fact that medical school curricula are designed for a rate of learning somewhat below the average in the class. I believe that we should attempt to allow some students to progress through medical school at a fairly rapid rate; some of them could graduate in three years.

Secondly, we must have curricula which will accommodate to people who take a little longer in medical school. There are two reasons for taking longer in medical school than is the custom. One is for the individual we are discussing, namely, the slow learner. The other is the student who wishes to take longer in medical school in order to study in depth or in order to have an additional advanced degree.

The curriculum which we are developing at the Medical College of Ohio at Toledo is designed to accommodate both of the extremes of learning. Briefly, it is divided in four parts, some of which occur simultaneously.



In the introductory period (Phase I) man is examined from three points of view. First, as a member of his environment; this demonstrates his ecology and sociology. Second, he is looked at as an individual; his anatomical, biological, and psychological nature are discussed. Third, man is looked at from a cellular point of view. Phase II immediately follows and here there is a study of the systems of the body which lasts approximately sixty weeks. Concomitant with the initiation of Phase II is a continuation of clinical work which was begun in Phase I, and this is now referred to as Phase III. This relates to the systemic review of Phase II and then expands and increases in intensity during the last years that the individual is in the medical college. Phase IV, which also is initiated at the time of Phase II, is a period for independent study or electives.

The fast and the slow learner can be accommodated in this scheme in the following way: There is a fair amount of free time during all of these phases and it is during this period of time that the slow learner can spend his time studying those things which are currently being taught and can have individual tutorial sessions if these are necessary. The average or rapid learners may be engaged in other activities during this free time. During Phase II the period of systemic review - the slow learner may drop out of the usual sequence for a period of time and study that system of the body which the class has just completed but which he has not learned adequately, according to his teachers. He can take the missed portion of the curriculum when it is next taught. He can rejoin the usual sequence when he and his advisor believe it is propitious. Thus an individual instead of taking 60 weeks to complete the sequence might take 120, since he would be dropping in and out of Phase II in order to learn adequately the essential material. Of course, such individuals will not have to alternately take and omit sections of the curriculum. As their learning ability increases, they may well move along with the rest of the class. Because of the nature of the independent study period, these students could make up their systemic studies during the latter part of their medical school course in order to keep up and graduate with their class. By using this particular system we hope to be able to accommodate to the special needs of students who come from culturally deprived backgrounds. If we determine that some individuals do not have skills - such as reading ability, adequate mathematics, biological information, or other information needed by a physician - it will be possible to augment their education during the free time in the curriculum. Such a system requires intensive counseling.

There is nothing particularly new about this concept except the fact that we will recognize that students do learn at different rates and that the reasons for the different learning rates are quite variable. In the past we have recognized psychological problems of students but have not related these to the total environment in which the student has grown and developed. It is my hope that we will be able to identify and to deal with the problems of medical students from all kinds of backgrounds. If we can do this, we will be able to admit students who have a potential for being excellent physicians but who, for one reason or another, have not been admitted to medical schools because their potential drop-out rates are high. The challenge to medical educators is to identify talent and to foster latent ability.

I believe that programs can be developed in most medical schools which will allow the educationally deprived student to successfully achieve the M.D. degree and thereby to become a really useful member of our society.

DISCUSSION

SPECIAL PROGRAMS - CURRICULUM AND FLEXIBILITY

Panelists:
Alvin Beilby, Ph.D.
Mac V. Edds, M.D.
Clifford Grobstein, Ph.D.
Robert G. Page, M.D.

Moderator:
Harold J. Simon, M.D.

DR. SIMON:

We will continue with discussion of these three papers. Dr. Beilby, your turn.

DR. BEILBY:

Some of what I was going to say has been covered by Bob Page. One reason why I was asked to join this discussion is because I have been involved in the post-baccalaureate fellowship program directed by Bill Cadbury. As Bob Page ntioned, there are both advantages and disadvantages to the program, and I think I saw more of the disadvantages than the advantages. I think a better solution is to allow students to take needed courses at the undergraduate level in medical school, more so than a fifth year at some other college.

I might mention that the students in the program were primarily chosen from the Southeastern colleges, and they went to Pomona, Haverford, Kalamazoo, Oberlin, and Swarthmore. I think one of the problems is that, when these students come from the Negro colleges in the South, the step up to one of these prestigeous, high-quality colleges can be almost too great for them, both academically and socially, and they have to make still another transition into medical school. Based partly upon some of our experiences with students at Pomona, I think it makes more sense for these minority students to go directly to medical school and to have the opportunity to take the first medical school year in two years instead of taking a fifth-year post-baccalaureate program at some liberal arts college.

DR. EDDS:*

A good many of the people in the room have had the privilege of being involved in the starting up of a new medical school. I think, as I look around,

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own University
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that I'm unique in the group, having been involved in the starting up of two new medical schools.

I had something to do with establishing the new school at Brown. During the past year, I've had the very great privilege of being a visiting member of the faculty at San Diego, where I've watched, and to a small degree shared in, some of the things that Dr. Grobstein and others have been talking about here today. I have had my own background very much enriched by both of these experiences, and by what I have heard here today.

Out of the complex of experiences, I can say two things that I think will be useful to this group.

The new program in medical education at Brown is another one of those attempts to interdigitate across the interface between medical and premedical education. It attempts to take students into the program as Freshmen in college, and to turn them out six years later - in this case, part way through medical school, not all the way. Unlike what Dr. Lein described to you at Northwestern, where the student receives his Medical Degree at the end of six years, the Brown student receives his Master of Medical Science Degree, and still has two more years to go.

The thing that has impressed me about the products of the Brown system, and comparing them with the students I have known this year at San Diego, is that, in both cases, they seem to be a new breed of student, quite unlike any that I have experienced before in premedical or medical education. Brown and San Diego are altogether different kinds of settings, and greatly different in their patterns of education. Thus, I'm almost at a loss to account for the fact that the students are so similar and, in my judgment, a cut above anything that I have seen before.

I'm persuaded that several other schools should make an effort to obliterate the interface between premedical and medical education - obliterate it by whatever device seems appropriate to the institution. I'm of the view that a sharp interface between these two phases of education is destructive and inefficient, and is responsible for any number of defects. Not least of these is the unhappy and unfortunate competition that exists in many institutions amongst the students at the premedical level. This leads to all kinds of back-biting and unfortunate behavior known to those of you who have seen premedical students over the years. This sort of thing is completely gone now at Brown in this new program. There is a community of interests, a spirit of self-help, of mutual interaction, that is truly admirable. There is an enviable spirit, an enviable maturity of attitude in what the students decide is important and try to learn. The way they go about their business, the way they approach and interact with the faculty, regarding them as - buddies, which isn't quite the word I want, but it is certainly something opposite of enemy. This is what I now see going on there.

I also want to agree with something that Dr. Hexter said earlier this afternoon. I would not want to give anybody the impression that Brown's experiment, or San Diego's experiment, are the only ways to do it. I am absolutely in favor of a very broad diversity of different kinds of medical education and experiences. Otherwise, I think we would have very much more to worry about than we do now.

DR. NELSON:*

I would like to reply to Dr. Grobstein. I'm not sure on a functional basis that there is a great difference between the program at Stanford and the program at San Diego.

I think that when Dr. Grobstein discusses areas of concentration he is suggesting the type of flexibility that we are developing in the program at Stanford. We're both talking about the means to develop better methods that will focus on the student's ability and his eventual success in medical school. I think what we are trying to emphasisze, and the message that we are trying to send to the students, is the fact that we see students coming in from very different types of backgrounds with different career aspirations, and as a consequence they benefit from different educational pathways. Instead of placing them in a core, we must help plan individualized programs to help them as much as possible. It is the responsibility of the faculty, through the faculty advisors, to plan with the students a balanced program, and one that in the end will be consistent with what the student believes he is going to do.

This may sound like a request for a premature definition of career goals. It's not meant to be. I think that our experience - at least my experience this year, and over the past three or four years - is that very few students go into medical school with a well-defined idea of what they want to do when they get their degree. Most of them make up their minds about what they eventually want to do sometime during their internship, or even during their residency.

But, there are some students who are determined earlier to enter into medical science, or who want to go into psychiatry, or what have you, and the faculty must advise these students about how best to benefit from the undergraduate medical curriculum.

I think we should get down to the fundamentsals of what goes into the training of an M.D. Medical students can no longer by type cast. Also, the field of medicine has grown so large that we have people going into what really would amount to different doctoral programs. It is difficult to justify that all medical school graduates will be required to possess identical amounts of knowledge in the different fields. This is the issue today. Psychiatrists, for example, believe there are many different pathways through medical school into their field. Advisors must try to determine where a student should receive advice, and what the implications of this advice will be. The advisers play critical roles.

It's much the same at Stanford as it is in San Diego. I think that on a functional basis our curriculum is much the same as it is at San Diego.

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*Dr. Bernard W. Nelson
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DR. FRAZIER:

I can't help but comment that some of the students whom we have interviewed for medical school last year said, "Yes, Stanford has a marvelous elective program, and you can select anything you want as long as it is molecular biology."

Relative to certification (the giving of the National Boards), we saw earlier today a very drastic demonstration of the rate of forgetfulness. I am wondering whether Part I of the National Boards must be given all at once after two years at Stanford, or whether the student can take each individual part when he feels ready for it?

DR. NELSON:

That's no longer possible. The National Board Part I is now given in a series of six examinations in associated areas. You either pass, or you don't pass. You can't tell which segment will be biochemistry, anatomy, or something else; the questions are all intermingled. They have to pass it over-all.

I said at the beginning that the curriculum of the medical school will reflect the strengths or weaknesses of the institution, and will determine the type of physicians trained there. I don't think that molecular biology is necessarily the only area to be studied by students. At Stanford, we are developing many different types of programs. The fact is that once we had a free time program, where really the only thing a student could do well with his free time was research. For the student who came to medical school and wanted to get into research, and did well in research, this was fine; but if the student came to medical school and really wanted to do something else with his free time, I don't think this was very good. Then, if he did not do well, he would often be unhappy.

DR. CREGER:*

I work part time in the Dean's office at Stanford, and part time out of the Department of Medicine. From this vantage point, I want to say a few words in defense of what Dr. Nelson said, and he doesn't need any defense, and in offense of what Cliff Grobstein said, and he may need some offense.

I want to say a little bit from the student's standpoint, as I perceive it, with regards to this elective curriculum. You may be right. There may not be much to choose from in theory between the curriculum that is set up for the students, and a bunch of electives that he sort of has to find his way

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through. Actually, the student's perception of the importance of what we have done so far is that of a modest difference between what is required and some things that he can take but really doesn't have to take. His perception of that importance is in terms of a little bit of earnest money to the effect that he's not entirely on a belt line all the time. I realize that electives have been thought of before, and used before in medical schools, and maybe we make a little too much out of them. But a student's perception and his happiness is something - he is a little bit more the master of his own fate, and I think psychologically this cannot be overestimated.

I think our elective curriculum will prove to be extremely helpful with regard to the problems of the minority groups. We're kind of laying up money in the bank to fit ourselves for this program on which we have started, something that I think will be very important.

I also detect, as I sniff around among the departments and the teachers in courses, that there's a little bit of nervousness among the professors about whether students will take their courses, and whether the students will like them. I think that's the first healthy nervousness I have seen among faculties.

There is no curriculum that will get very far, if the quality of the teaching isn't very good. The dictionary definition of a curriculum is a device for carrying something. It's kind of an empty thing, and you have to put something in it. So, I agree with Cliff in that sense. But, Cliff, you could have mentioned some criticisms of the way it's going, because there are some criticisms. I'll supply some that have come to my attention.

It's very hard to schedule this kind of curriculum. A student, for a year or two, may want to do one thing. In another year or two, the student may want to do something else. It's pretty much on the level of a fantastic three-dimensional chess game. That is a real difficulty.

There is another problem I think all medical schools are faced with. We ricochet between the idea that every doctor has got to be pretty much able to take care of anything that's tough in an emergency and, at the same time, he has got to pursue a specialty. The idea seems to be that doctors have got to be able to do something of everything - when, in fact, that's not what doctors do most of the time. It is not going to be easy for us to handle, but Stanford may be a little bit more consistent from that point of view.

Lastly, this business of everyone having to be a molecular biologist. That's an old dream which some of our older professors have. Some of the younger professors have cast off those dreams and, fortunately, our students were born without them. So we now have a lot of people interested in clincal medicine.

Actually, I have every hope that this elective curriculum will allow those students with defined interests to get on with it earlier. In fact, I believe that the guts of preparation for clinical medicine is really pathology, physiology, laboratory diagnosis, and physical diagnosis, and everything else is nice. But it is those essential things which will allow him to ask the patient the questions that really make sense. In fact, you can do these in about 9 to 12 months. Under this elective curriculum, those who have special interests can pursue them earlier than is usually the case.

DR. WEYTER:

A great deal of talk has been about the standards at admission, but we have not talked about the standards at graduation.

DR. KIMBROUGH:

Gentlemen, in listening to your comments, I am reminded of the famous Roman critic Quintilian who over two thousand years ago said, "Whilst we deliberate to begin a thing it grows too late to begin it." I have read of proceedings such as these for the past five years and all that has been accomplished is that you have deliberated.

I certainly appreciate the difficult task which those of you have whose job it is to design a new curricula for medical students, and also those of you on the Admissions Committee in your respective schools. I myself would hate to sit in judgment of an applicant be he culturally deprived or otherwise, as I just might turn down another Albert Einstein.

Gentlemen, we don't know all the answers about intelligence, nor do we know all the facts about learning. We do not know how a ghetto applicant will do in medical school, neither do we know how an applicant from Appalachia will do in medical school. It may very well be, gentlemen, that the applicant from Appalachia or from the ghetto would know more about human ecology and the human continuum than the most affluent among us. This you must ponder.

It seems to me that you could devise a curricula for medical students that would have some degree of relevance in the practice of medicine. And, if any student says that this course or that course has no relevance, then the fault lies with the professor as he has failed, indeed, to bridge this gap.

I should hope as far as admission to medical school is concerned, that this procedure would follow the lines of our European schools - a student once having fulfilled all requirements should be allowed to pursue a course in medical school. This, of course, can only be done if the human element is taken out of the admission. We certainly don't need to interview a student applying for Engineering School or to a School of Philosophy. But as long as the human element remains, in spite of our good intentions, we tend to perpetuate those whose backgrounds are similar to our own. This, of course, is an understandable thing, but, gentlemen, there is a cultural revolution

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going on, not only in America, but indeed throughout the world. And this time the have nots are allied with the haves.

One thing more in closing. I'm terribly concerned with what happens to the medical student once he has graduated. As you well know, the top 15 percent of the class get lush assignments in major medical centers, yet statistically these are not the people who go into the practice of medicine; while, the lower 50 percent get poor assignments away from medical centers. Yet, these are the very people who should be allowed to brush arms with the great men in medicine, as they form the backbone of American medicine. I would certainly like to see this approached in a more democratic way. Ways should be found to get more physicians who will actually practice medicine into major medical centers.

DR. EPSTEIN:

I would like to ask whether any of the people here can visualize a significant change in the faculty recruitment and promotion question, which is, after all, the thing that will make it go, or not go. Teaching, especially in small groups, is becoming ever more important. This is terribly time consuming, and demands specialized skills and attitudes, as does counseling and advising. We have the triad of teaching, research, and public service on which promotions are based in most schools. Perhaps instead of research, teaching, and public service, promotions should be based on teaching, public service, and research. I wonder if the people who are putting together the new curricula, all of which emphasize small group interactions, using faculty who have no formal training in the teaching field, and who frequently know nothing about the process of learning, whether they visualize any significant changes in the faculty. How do they see faculty recruitment for these new curricula?

DR. PAGE:

I can sum it up very simply; I think it's very difficult.

I think that you're right. In the past, as you look at the pattern across the country, faculty awards were based on, unfortunately, the weight and frequency, and not the content of research papers. That's a little unfair, but there's been very little attention paid to the other things, mainly I think because they're harder to measure.

It's very difficult to say whether this teacher is a good teacher. What is a good teacher? The students say one thing; the chairman of the department says another. The administration probably will say something different again. And the guy who has to put these opinions together really comes up with a terrible potpourri. He has to stir around and come up with something that hopefully will make a little sense. I don't know how you do this really effectively, but I think we're all going to be working at it, to see if we can work out some system.

I think the matter of service is something that can be measured, and it has not been looked at very carefully. It depends on the kind of service you are talking about in the community, whether it's practice, or organizing community health services, or organizing programs in continuing education so that the physicians in the community can provide better service, and so forth. All of these things, I think, have to come into our thinking.

Before I stop talking I would just like to make one comment in response to one of the things that Dr. Kimbrough said. He said it would be nice to be more democratic, like Europe, and send everybody to medical school. That sounds good. But if you go over to the European medical schools, you find that, after people graduate from what is their equivalent of high school, they go into what is called the medical faculty. But then they have a hell of a time getting through. The screening process really occurs at about the same time as it does in this country, strangely enough, if you look at it from the standpoint of the calendar years of the students' existence. And the students get clobbered after being admitted to the medical faculty at about the same time they reach the winnowing-down process which occurs in this country between college and medical school.

DR. EDDS:

I would like to add just one thought to these remarks of Dr. Page. I agree with him that it's very difficult to evaluate the quality of a man's teaching or service contribution. However, I don't personally think that it's any more difficult to evaluate either one of these things, than it is to evaluate research. I think they're all equally easy and equally hard. What we haven't done in the past is to admit this. We have hidden behind the assertion that it's difficult to evaluate teaching, and we have not accepted the notion that it's difficult to evaluate research. I hope very much in the years immediately ahead for some changes, or at least perhaps some reassessment of these things.

DR. HAMBURGER:

I wanted to make a comment and then address a couple of questions to Bernie Nelson.

In regards to the new curricula, how do the faculty decide what will be appropriate to core, and what to electives? On what basis will students be promoted? I think that you just can't legislate new criteria for faculty attitudes. They do evolve, they do evaluate, and I think they are responsible.

But I have two questions: First, with the 12 quarters at Stanford, can it be done in three years by going through the summers?

Second, how did you get the powerful departments who elect their representatives to the faculty senate to send you good representatives, rather than send you departmental representatives who are there only to guard parochial interests; departmental politicians, as it were?

DR. NELSON:

The answer to the first question is that a student may go through in three years. I think that's conceivable with some of the students who come to Stanford with Ph.D.'s in genetics, or with other exceptional backgrounds. They might very well benefit from only three years and get on with the business of what they're going to go into, and I think that's appropriate.

The majority of the students will take longer than that because I don't think any of the faculty feel it is appropriate to go through in three years, although you all know there are an awful lot of people here who went through in three years during the war.

The question about departmental representation to the faculty senate--I think that's a real problem. The people who are willing to serve will eventually be sorted out, and they will be selected to serve on so many committees that so many they won't know on which to serve, and may become very politically conscious and politically active. But, on the other hand, this goes on all the time anyway because they're sometimes the only people who will serve on committees. Some people are appointed to committees and don't serve.

I think there is still another factor. If you look at what determines the nature of the faculty, you find the main reasons why research is at the top of the promotions criteria. When you have a medical school faculty that has tripled in size in ten years, this growth did not come from school funding, but from the ability of the school to attract research monies. In order to get the faculty members there, the school has to elect faculty who are competitive for research grants. In a large part, this determines the nature of the faculty. I think this is changing somewhat, but it is the main reason why research is at the top.

DR. WEYTER:

As one concerned primarily with the premedical program at the undergraduate level, I find the curriculum changes discussed here today very interesting, but I feel it is not getting to the heart of the problem.

The major problem is that there are so few places available for the students applying to the medical schools. Unless there are more places in medical schools, I don't see how we will lessen the competitive nature of undergraduates when we know there are so few places available for qualified students. There are a number of places where the students can go to pursue their undergraduate education with a more flexible curriculum. But if he does so, he must get into those four or five medical schools that have more flexibility in their admissions criteria. At the same time, he minimizes his chances of getting into the others.

DR. PAGE:

Write your Senators and Congressmen. We need all the support we can get increase class sizes.

DR. WEYTER:

Well, that is the major problem, there just are not the necessary places available.

DR. GROBSTEIN:

This reminds me of another type of disadvantaged premed student, disadvantaged not because of race, or color, or the other usual factors. This is the student who is a social science or economics major in his Freshman, Sophomore, Junior years, and then decides to become a premed student. He is sincere and motivated, but it is impossible to obtain all the undergraduate requirements for medical school, so he has to take a fifth year. Does this type of flexible program allow the student to take some of these requirements as a medical student?

DR. PAGE:

There's a real problem here. It depends on how deficient he is with respect to the rest of the group. If it's a course he could make up during the summer, he may get by. He may get by right now, but will he be able to later? I think these students very frequently have a tough time, as the rest of the class has information they do not have. The bright students can make it up. They get by. But the slower student needs much more time to be able to do it.

QUESTION:

Is it advisable for these students to come to Stanford?

DR. NELSON:

I would not want to encourage many to apply, because I don't think many would be admitted. A student this year is taking anatomy, physics, pathology and physiology, and it is working out quite well. But this may not be the best way, and he might have been better off taking a fifth year of undergraduate work prior to matriculation in medical school.

DR. PAGE:

I also argue for the first year in the same institution instead of the fifth year program. The fifth year student goes to another undergraduate college, but he already has a degree. He is an odd person, not working for a degree. He is in limbo, so to speak. This is psychologically poor. One of the hang-ups may be that he needs a particular course or other. It may be physics, or some other course more often taught in high school than in colleges. These course requirements are demanded by people who have been out of college 10 years, and they remember the kind of courses they took in college. If the student then finally takes that course, just to get it over with, what does he really know? What we should be interested in is whether he knows the important terial, course or no course.

DR. CREGER:

Back to the question of the teachers. A discussion of the teachers in premedical schools today relates directly to the major purpose of this meeting. Some of these teachers are a source of much of discouragement to students. The students fail in a subject, or don't do well, and they don't go on to medical school. They just say, "I guess it's not for me." However, in my last 60 interviews with minority applicants, some of them were still undecided. What they really needed was encouragement.

But, I also want to answer Wally Epstein.

We have a large group of excellent teachers, and we regularly let them go. Third, fourth, and fifth year residents and fellows are first rate teachers, and we regularly let them go at the peak of their training. They get some pretty good offers outside, and we let them go. We should make better use of them.

MR. JESSEE:

As a product of a Stanford undergraduate education, and now a student at UCSD, my loyalties are split. But I would like to make two points:

First, the whole process from the time in high school to the M.D. should be as much of a continuum as possible. Every time there is a hiatus between the different stages of education, a student gets some kind of an offer, and he may frequently drop out. It should be possible to provide this type of continuum. From that viewpoint, I'm a proponent of Dr. Lein's proposed six year curriculum. But no matter how long or what form it takes, there should be an educational continuum provided.

As to the selection of curricula by medical schools, it is encouraging to note the current trend toward flexibility. A student is now afforded flexibility in choosing the type of curriculum in which he wishes to study as well as flexibility in the courses he wished to take. That is, there is variety among the medical schools as well as within them. The Stanford plan, the UCSD plan, the Brown plan - they are all very useful, but each for a different type of person.

DR. GROBSTEIN:

I assure Mr. Jessee he need not have split loyalties as far as I am concerned. As a member of the Stanford family--once a member, always a member. But as a present member of UCSD, well, I don't see any big conflict of objectives.

I am convinced that, in one way or another, Stanford will solve its problems. We are all groping in different ways. There is a great diversity of views. But, as I have said, the student's decision as to what he will take, and what he will not take, will certainly have to reflect the greatest amount of interaction between the student and his advisors, and advising is still a major responsibility of the faculty.

R. HEXTER:

I would like to make one comment about what was said. I think the necessity for faculty responsibility for promotions is as important as it ever was. Teaching and community service are parts of faculty responsibilities which will always be part of the standards for promotion.

DR. HAMBURGER:

I think Dr. Hexter has put it very well. It is the faculty's responsibility, and the faculty's responsibility to adapt to needed change.

We are going to have to change the requirements for faculty recruitment so that the diversity of curriculum will reflect faculty capabilities. You do not need every faculty member to be equally effective in all areas. He must be effective in some integrated fashion. I don't think anyone would want to hire an individual who is only interested in one thing--community service, or teaching, or research, and I expect that faculties will always recognize this.

Back to the point of Stanford and UCSD. I think what is more important is the manner in which the advisory groups are being chosen. These advisory groups will have a key function, and yet it seems they are chosen almost by lot. But it's the advisors who must see that the student has a balanced program, and has the necessary requirements for graduation and licensure.

The San Diego Plan is much different from Stanford's in this respect, since the advisory groups are self-selected. They are important to some students, but not to all of the students. I think that is an important difference, and it is also very important to ensure that the faculty groups advising students will consist of competent advisors. I will be interested to see how the advisory groups work out at our two schools.

DR. SWANSON:

Do you think the increased participation of students in choosing the curriculum in medical schools is going to make it somewhat easier to evaluate teaching?

DR. NELSON:

Our students have been active in evaluating teaching for many years. We have teams of students doing evaluations, and they are evaluating all of the faculty to determine which of the faculty are the best teachers. It has worked out well, but we must be cautious about this approach. We don't want a popularity contest. Sometimes what appears to be good isn't always good. Even if the evaluations are good, it's very difficult. The faculty will frequently disagree with the students because of manner and content. We don't want that popularity contest--like the students' evaluation, "He seems like a good teacher because he's a nice guy."

DR. ELDREDGE:

We keep coming back to the problem of evaluation of teachers. UC Davis has been investigating this problem for two or two and a half years.

Dr. Milton Hildebrandt has conducted considerable studies on this, and has come up with some very interesting findings. Some of these may well provide answers to some of the questions that have been raised here. In the evaluations, students are rather unanimous. They were unanimous about whom they considered bad teachers and whom they considered good teachers, and it didn't seem to matter whether the student majored or minored in the department, whether he was a Senior or Freshman, male or female; they seemed to be unanimous in their evaluations.

They did come up with, I think, five areas that describe a good teacher. If you are interested in this study, you might contact Dr. Hildebrandt. He is more than willing to share his experiences.

MEDICAL SCHOOL INTERACTIONS WITH PREMEDICAL ADVISERS

THE PREMEDICAL ADVISOR: WHO NEEDS HIM?

William M. Hexter, Ph.D.

Some twenty years ago, before the discoveries of the molecular biologist and electron microscopist revealed to us our present understanding of the cell, a good-natured argument existed between cytologists and geneticists as to what the cell really was. They pictorialized the argument when they drew on the blackboard their conception of the cell. In both instances, the circumference circumscribed by the cell membrane was the same, but for the geneticist the nucleus was very large and dominated the cytoplasm. To the cytologists, however, the nucleus was very small and hardly noticeable.

I am tempted to extend this manner of expression to the image of the premedical advisor as visualized by his two most important constituencies. If I am allowed a little artistic license, I would say that the premedical advisor is like a Bernini sculpture. On the one hand, he is the fountain of the rivers found in the Piazza Navona in Rome. Those who have seen it will recall a magnificent fountain with four parts, each gushing forth water. To the student, the premedical advisor is a many-headed (I hesitate to call him a work of art) person gushing forth requirements, ways to get into medical school, deadlines to meet, etc.

On the other hand, the premedical advisor is the quaint little Bernini ulpture of the elephant with the obelisk on its back in the Piazza della Minerva near the Pantheon in Rome. This is the way the medical school admissions committee sees the premedical advisor: a ponderous pachyderm weighted down with a pointed shaft (symbolizing the single purpose of the premedical advisor to get the students in) directed straight at the heart of the Dean of Admissions.

We all know that both these views are incorrect. If we had to select a characterization of the real premedical advisor, we would pick Bernini's lovely statue of David; youthful in appearance, his well-proportioned torso and purposeful gaze reflecting firm resolve, even-temperament, and steady equilibrium. Who would doubt this youthful David could take on any and all Goliaths?

But what in particular is the need for the premedical advisor? What does he do, this over-worked, underpaid, little appreciated person? To say that he is a liason between the medical schools and the premedical students is to over-simplify, for certainly he is that and much more. Let us first examine some of the interrelationships between the premedical advisor and the premedical student, leaving until the end of this paper the somewhat more complex relationship between the premedical advisor and the medical schools to which his students apply.

It has been my experience that the potential medical student enters undergraduate college quite unaware of the requirements for medical school, and of the route he should follow so that he may be admitted. There is no other segment of the student body for whom myths form so quickly or spread so rapidly as for the premedical students. One of the first functions of the premedical advisor is to ate clearly and at the outset what a premedical program is in relationship to e medical schools to which the student will apply and to the college in which he is getting his B.A. degree. Usually such a clear statement of requirements is sufficient for most students to enable them to make up their own minds as to which particular major they will pursue, or which particular subjects they will emphasize while in college. It has only been necessary for the premedical advisor to remind them of that handful of courses, physics, chemistry, biology, and English, which most medical schools will require for admission. The premed advisor also alerts the students to the prerequisites to these courses, and to the necessity for planning carefully from the beginning so that the student may fulfill his requirements in as efficient a manner as possible, while at the same time pursuing his principal interest in college, be that chemistry or French literature.

In addition to this straight-forward objective information about premedical requirements the student is advised of the mechanics of applying to medical school. These are generally important to the student in his junior year, and include such things as the MCAT test, when and how to make application to the medical schools, and probably most importantly calling the student's attention to the Medical School Requirements book put out by the AAMC which contains the specific information for each of the medical schools. I need not dwell on any of this. It is certainly familiar to all the premedical advisors and is not of particular interest to the medical school people at this point. However, I might add that providing this information, prosaic though it may seem, occupies a great deal of the premedical advisor's time. It is amazing how many students will ask such obvious questions.

A second point of connection between the student and his advisor concerns estions of more importance to the student, and yet more frustrating to the advisor because of the lack of clearcut answers. You have all heard these questions before. The most common one is generally put in the following rhetoric: what are my chances of getting in? This question is often asked after the student has sampled one or two of the beginning premedical requirements, and has met with varying success. The difficulty of answering this question, of course, is obvious. For one thing each medical school will view the particular performance in these few courses differently; so no general statement can be made. It is possible to tell the student who's getting A's in all his science subjects that his chances are pretty good of being accepted to medical school. It's also easy to tell the student who's getting all C's in his science subjects that it's going to be very difficult for him to be admitted. But for even these generalizations there are exceptions, and what is more frustrating and complicating is that seldom does one meet these consistent records. Rather you see the student who is pretty good with one or two weaknesses, or whose record has been average but has occasionally shown some flashes of achievement. What do you tell these students? It is the task, and one of the most important ones, of the premedical advisor to make the student aware, in as objective a manner as possible what his chances are, to keep him optimistic and at the same time realistic, and, in those painful instances where the record of the student makes it seem very likely that he will not be accepted to medical school to try, as kindly as one can, to tell him of your evaluation and to alert him to other possibilities for a career. This is not an easy thing to do. For, often those students whose records seem least promising are the ones who come with the greatest dedication and motivation for the study of medicine, and the bleak evaluation of their prospective failure can be a letdown, to say the least. Regretably the premedical advisor is not especially skilled or even ained for this delicate area of diplomacy and psychology.

And, finally, there is that very difficult relationship when the student eeks out the premedical advisor, not to ask him a specific questions or even what his chances are, although that often may be the point of introduction, but to talk to the premedical advisor as he would talk to any other faculty member or advisor on the campus because of real or imagined troubles. I don't necessarily mean in the clinical sense, although sometimes that is the case. The student, in trying to resolve questions about his future, feels the necessity for someone to listen to him. These students are often recognized when, after they have received a specific answer to their specific question, they don't leave the office, but grope for another question and very quickly pour out their troubled hearts. I don't mean to over-dramatize this, but it has been my experience that there are such students, and that the premedical advisor had better be aware of them. You will be sought out because you are identified as the premed advisor, and it is easy for a student pursuing the premedical program to talk to you. The fact that many premedical advisors will be what are called "kindly people" will increase the probability that the students will talk to you. For me, at least, these students are the most difficult to advise because the answers to the questions they ask are more often inside them than within me. I venture to say that few premedical advisors have been specifically trained to serve this function and one can only rely on experience and maturity to assist these students to find themselves.

It is easy to answer the original question, "The Premedical Advisor: Who needs Him?" The student needs him, and the advisor should not be replaced by a personnel officer or, at the risk of offending some of my friends, by a non-ching member of the faculty.

However, it is not only the student who turns to the premedical advisor, but also the medical schools. Much of the information about the premedical student comes directly or indirectly to the medical school from the Premedical Committee personified by the Chairman of the Committee, whom I have equated in this discussion with the premedical advisor. (I hasten to add that at larger institutions there may be many such people; whereas at small institutions, such as I represent, one person does this job.)

What is this information that it is the responsibility of the premedical advisor to transmit to the medical schools? Most importantly, of course, are the letters of recommendation written on behalf of each student. Again reflecting local practice, these letters are written by the Chairman of the Committee, who is the premedical advisor. The letters represent the views of the other members of the Committee as they were stated in a meeting of the full Committee. These letters are then submitted in draft form to the other members of the Committee for their corrections, additions, and revisions, and returned finally to the Chairman of the Committee, who then writes the letter in its final form. The letters of recommendation from Amherst College go out over the signature of the Chairman of the Premedical Committee. It has also become the practice of the premedical advisor to interpret some of the data in the letters to the various medical schools. These data may include what is meant by rank in class, grading practices at Amherst, and description of any changes in curriculum, or grading matters which may be of concern to the medical schools. It is often the case for medical schools which receive many applications from Amherst that one of the bers of the medical school admissions committee will call or write about more information, particularly relative ranking among these applicants. It is usually the premedical advisor who passes on this information, reflecting certainly to a large extent his own personal view, but hopefully also still remembering the comments of the other members of the Committee.

The premedical advisor often serves as the pipeline between the medical school and the premedical student with respect to curricular philosophy, admission criteria, and increasingly these days, interpreting letters from the medical school to the student concerning the status of his application. With the exception of those few medical schools with which the premedical advisor has had first-hand information, either by visits to the medical school or visits by representatives of the medical school to the undergraduate college, it is not easy often for the premedical advisor to provide the kind of information the undergraduate student wants.

While on this subject, one of the most commonly asked questions of me by my students is, what do I think of - fill in the blank - medical school? I tell the student my general impressions of the school based on my knowledge of their curriculum, my understanding of their basic philosophy if this is possible, and largely drawing upon what experience I have with previous students from our College who attended that school, and who have reported to me on their likes and dislikes. This information is often sketchy, perhaps misinformed, and usually unsatisfying to the student who asks the question. I urge the students to visit the medical schools in question. Most of them have, since an interview is usually required, but in some instances where the schools are great distances from our campus, the interviews are arranged at other places. I urge our applicants while at the medical school to talk if at all possible with the medical students already enrolled, especially graduates from Amherst if available, or any others. It is a fact that many medical schools arrange guided tours of the medical school that are conducted by medical students. If any of you do not do this, I urge you strongly to do so. It is certainly in your best interests, for medical students are generally the most enthusiastic propagandists for the school, and they are usually much more candid in answering questions from prospective students concerning attitudes and philosophies than are the deans of admission.

These, then, are the most obvious interactions between the premedical advisor and the medical schools. I am sure that the spectrum of relationships varies from very aggressive premedical advisors, continually in contact with the medical schools concerning medical school programs and the status of applications, to the more reticent premedical advisors who pursue only those items that seem of utmost importance to them. Lying between these two extremes, I suspect, are all others.

Analogous to this variability of advisors are the varied practices of the medical schools in providing information to the undergraduate institution. I am sure you're all aware that this is one of the most important interfaces between school and advisor, and I must add,regretably, has caused me some of my greatest dissatisfaction. I would like to discuss this in some detail, reflecting my understanding of the practices of most medical schools, and emphasizing that my remarks will take the form of generalizations - a composite picture of different practices by different medical schools and at different times. At the end, I would like to make a few suggestions as to what might become standard practice between medical school and undergraduate college. I emphasize the use of the word standard, and the avoidance of the word uniform. I am not advocating a uniform practice. I view with some alarm already the tendency toward uniformity in processing students with all the psychological overtones that this has for me and for them.

The medical school has two primary responsibilities in relaying information. First, and more important, is its responsibility to the applicant. It is essential that the applicant's application be acknowledged as received, either as completed or with the noted deficiencies. My impression is that this practice is generally followed by all medical schools that I am familiar with, and therefore is not under any kind of indictment. Secondly, in connection with the relationship of the medical school to the applicant, is the important essential of informing the applicant what the status of his application is sometime between receipt of the application and generally before the deadline the AAMC has set for the refunding of deposit fees. I know this sounds obvious, but time and again students have come into my office in March and April and have complained that they have not heard one word from medical schools after the acknowledgement of the application. Now it is certainly clear to these students that their application is not in a favorable position, but being the optimists that they are, they hold out some hope that favorable action will be taken on their application. Experience indicates that this is often not the case. What is more important is the feeling by the student that his application is not even being looked at. I would assume that this last state of affairs is an incorrect one, but it is often the general feeling of the premedical students that they are not being taken seriously. It seems so easy for the medical schools to improve this practice. Certainly I would think that the application has been reviewed and probably placed into a very large category of deferred applications. If this is the case, or whatever the case may be, it would seem appropriate that the medical schools inform the applicant of the status of his application. That this should not be so difficult is indicated by the fact that some medical schools do, in fact, inform every student within several weeks after receipt of his application what the likely status of that application is, from outright rejection to probable favorable action and various other categories in between. If the medical schools want to be taken seriously by the applicants, they must then treat the applicants in a serious manner. It is, in my opinion, unconscionable that a student will not have heard from a medical school as late as April or May.

Even should it be true that, in fact, his application has not been reviewed, and that this lack of review does not imply unfavorable action toward it, it would appear to me that the student should be so informed by indicating that his application will be considered, and that the delay has not prejudiced his acceptance. I doubt that the latter policy is followed by medical schools, but, to be charitable, if it is, the student should be so informed. There is considerable mystery among the premedical students as to what the timing of action of the application really means. Some of this mystery undoubtedly reflects the varying practices of the different medical schools. Some schools, for whatever reason, seem to fill their class quite rapidly, and inform the students favorably or unfavorably quickly, whereas others are more deliberate and take much more time. The net result, however, is a frustration in the mind of the student as he sees his classmates being notified by the medical schools, either favorably or unfavorably, while he has not heard one way or the other from the majority of schools to which he has applied. He is hesitant to write them to ask for information, for fear of prejudicing the response, and yet he is equally uncomfortable without any information at all. I have even had the experience of a student who finally in the early part of May wrote to a medical school from whom he hadn't heard and received a letter from them, which I considered most impolite, indicating that they hadn't got around to the application yet, but at a quick glance, prompted by his letter of course, it did not seem likely that he would be accepted. This impressed me as a very casual way of making an important decision for both the medical school and the student, and one wonders whether this is symptomatic at all. So I implore the medical schools, in spite of the increasing number of applications, if they wish to encourage students to continue their applications to them, they should respond in kind to the student by giving him the impression that, regardless of whether he is accepted or not accepted, his application was considered seriously. The reflection of this seriousness should be the communication of necessary information to the student.

I want now to turn to that last, most ticklish subject, the interaction between the medical school and the premedical advisor. In a small school like Amherst where the number of medical school applicants will range anywhere from 30 to 60 students, it is possible to have a fairly good understanding of who is being accepted, and how things are going, since the premedical advisor is likely to know almost all applicants personally. Whether this is as true at a larger institution, I do not know, but I suspect that the lines of communication between the student and the Premedical Committee are more blurred as the number of applicants increases. But even at Amherst, it is only through rumor and the ever-present student grapevine that I often am informed that a student has been accepted to a particular medical school, and I do not so readily obtain the information that a student has been rejected by a medical school. Again, we are dealing with a very wide variety of practices among the various medical schools in informing the Premedical Committee of the actions they have taken, and I am sure some of you are confident that you have discharged your obligations. It is to those other medical schools that these remarks are intended.

It is imperative that the medical schools inform the Premedical Committee, usually through the premedical advisor, who is the Chairman of that Committee, what action it has taken on the applications that it has received. It may surprise you, but not all medical schools do this. The most common way of informing the Premedical Committee is to send, usually late in the spring, May, June, and sometimes even July, a one-page sheet on which are listed all the applicants to that medical school from the particular undergraduate institution and the action taken: accepted, rejected, withdrawn, waiting list, etc. This information is very useful in spite of the fact that often it comes to me after the students have left the campus for summer vacation. This timing, however, may be unavoidable and it certainly is better than none.

A practice which I find more desirable and which is used by some medical schools, is to send me a copy of the letter at the same time it is sent to the student. Generally, these letters are of two forms, a letter of acceptance or a letter of rejection, but in some cases, there are even intermediate actions including waiting list, likely rejection but not final action, etc. It should be apparent that this form of communication to the premedical advisor much better serves his role as advisor to the student because it informs him of the action at the time that it is most important to the student. If it is the case that a particular student is receiving many such rejections of his applications, the premedical advisor is up to date as to what the status of the student is and can advise him accordingly. As mentioned previously, too often the student will come in with one rejection out of 12 schools applied to and from the other 11 he hasn't heard a thing, even though my guess is that some kind of action by these schools has been taken. Obviously, it is difficult to advise the student intelligently when there is such a large void of information, although it usually is possible to tell the student that no response at this late date, usually March, should not be interpreted favorably. It is my impression that with the reproducing devices we have now, it would not be very time-consuming for the medical schools to adopt this procedure. I am sure that it does cost money for Xerox reproduction and postage, but I would consider this money well spent.

To end on a note of nostalgia and idealism let me indicate what the optimal relationship should be. I might also add that there are still one or two medical schools with which Amherst interacts that follows these optimal procedures. The number at one time was larger but is dwindling to a precious few. I am referring to an evaluation sent by the medical school to the Premedical Committee for every student who applied to the medical school, indicating why the student was not accepted. (One might also, of course, evaluate those who have been accepted, but this information is not as germane.) Such an evaluation is particularly useful for those students whose academic records would seem to indicate favorable response from the medical school but who, probably for a variety of other reasons, are not cepted. Every year in Amherst's pool of premedical applicants there are one or two students who would seem to have all the necessary academic credentials for acceptance, but who are not quickly accepted by most of the medical schools to which they applied. Sometimes the reasons are even obvious to the Premedical Committee, but many times they are not in spite of the fact that we may know the students personally quite well. How nice it would be if the medical schools could give us reasons why students were not accepted. Yes, it is probably true that if we write and ask the schools about particular students, we'll get a response, but I prefer not to use this shot-gun method which tends to focus on some of the more inscrutable cases and ignores some others more obvious. It is often worthwhile to know why students who even we don't think should be accepted to medical school are not accepted. This educates us for future letters of recommendation.

It seems apparent that the reason this practice is not followed by most medical schools is the volume of work it would entail. More is the pity. Perhaps one suggestion might be worth considering. I refer now to the relationship between medical schools and undergraduate schools where the number of applicants each year is a reasonably high number, let us say a dozen or more. Perhaps the medical school has on its staff, but not necessarily on the admissions committee, an alumnus of the undergraduate school who might be willing to serve as a liason between the medical school and the undergraduate college. Perhaps this liason could receive information from the admissions committee about the applicants, and could convey this information to the Premedical Committee. Yes, this would take some of his time, but it would seem to me that his presumed interest in the medical school with which he is associated and, hopefully, his interest as an alumnus of the school from which he graduated would convince him that this service w in his best interest. It would also, of course, take some of the admission committee's time, and they might feel that they would be abdicating some of their responsibilities to those who do not share the entire perspective of the admissions program. I'm not sure of this, and I certainly do not want to seem presumptuous in the area of medical school admissions, but I have seen this practice work with one or two medical schools, and it is very helpful to receive a letter, sometimes a page and one-half in length, concerning the student whose academic record would say, Yes, admit, and yet who, for other reasons, was not accepted by the medical school. The absence of such information makes the premedical advisor's job difficult, if not intolerable, and we must use our imaginations to see if we can improve our rapport without relying always on the initiative of the Premedical Committee to seek this information - always at the risk of becoming a pest.

Thus, another answer to the question, "The Premedical Advisor: Who Needs Him?" is the medical school. With the trend towards increasing applications, computerization of these applications, standardization of forms, compilation of formulas to reduce the MCAT scores and the grades in college to some utilizable formula, I am concerned about the future trend of medical school applications. Mind you, I am not against progress. I am not one who says that just because a computer is used, it is wrong. There are efficient ways of doing things and these ways should be used. But medicine, it seems to me, is too important a natural resource and doctors obviously too important an ingredient of that resource to leave the selection of physicians completely in the hands of computers, secretaries, and mathematics. One of the strengths, it seems to me, of American higher education is the diversity of the undergraduate institutions which comprise it. There is no way, it seems to me, to standardize the variety of applications from these different schools, and I fear that standardized forms will act prejudicially toward good schools where courses are difficult, grades are not high, but students are of top caliber. I mean to plead no special interest but to say that, because the number of applications is going up and the processing of medical school applicants is becoming more difficult, this demands that we increase, not decrease, the personal factor we bring to bear on the entire application process.

THE INPUTS AND OUTPUTS OF PREMEDICAL PROGRAMS

Alvin L. Beilby, Ph.D.

The inputs and outputs of premedical programs can be best discussed by referring to a diagram composed of blocks representing the various groups with which a college premedical program can interact, and of arrows connecting the blocks representing the inputs and outputs. The six groups that are included in the diagram are the college premedical program and the medical school as the central blocks, and the Association of American Medical Colleges (AAMC), the high school, the alumni, a premedical advisers group, and the community medical doctors as subsidiary blocks. For completeness, lines of interaction among the groups independent of the college premedical program are included in the diagram and in some cases will be mentioned briefly in conjunction with the specific discussion of the college premedical program interaction with a group. The flow of students from one block to another is represented by the double line arrows and will not be included in this discussion. The comments, ideas, and recommendations which will be presented have come from my experience as a member and chairman of the medical sciences committee of a small, liberal arts college. As with scientific data, where extrapolation of results from one region to another is not always possible or wise, some things discussed may not be applicable to all sizes of institutions and premedical programs.

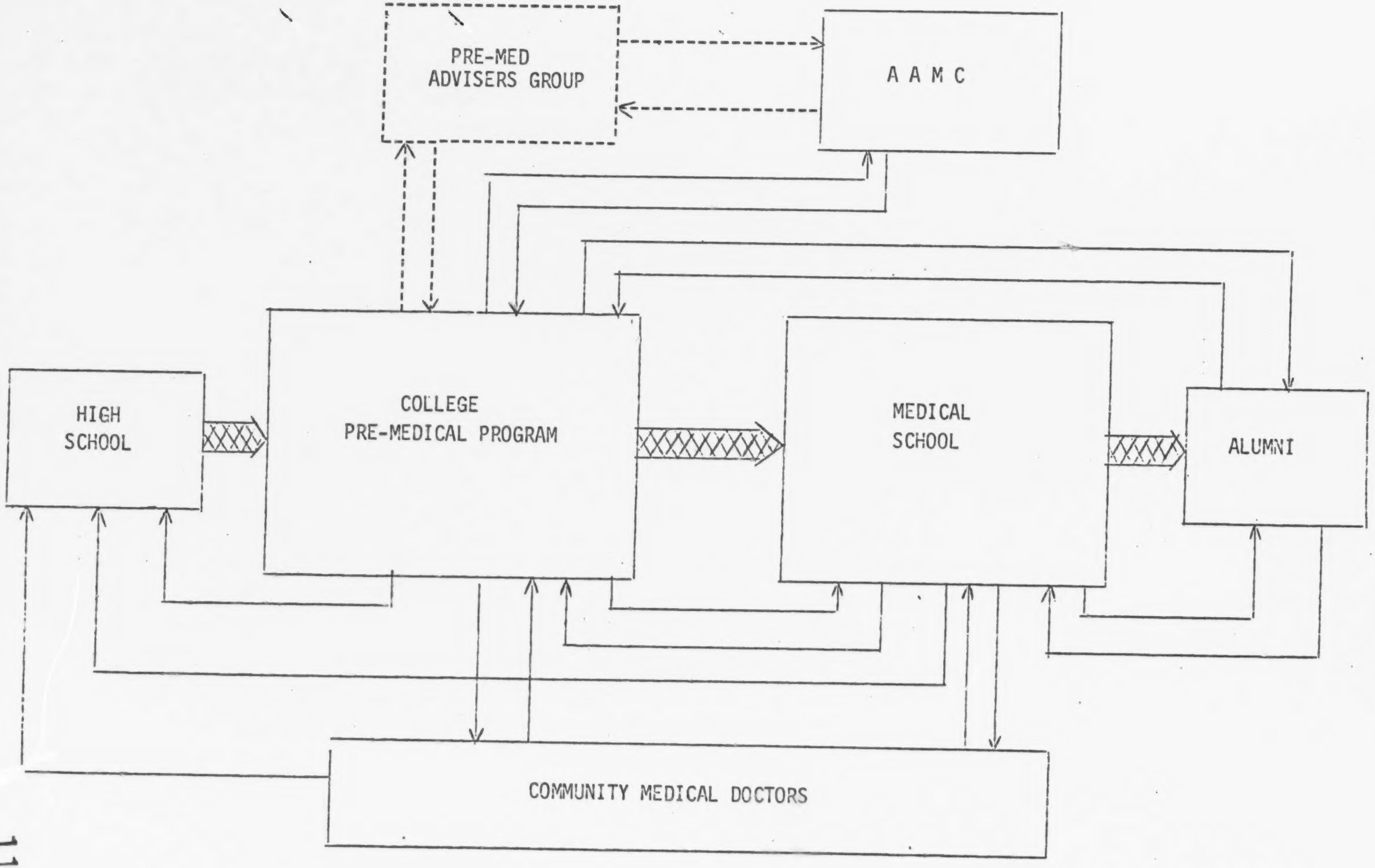
IGH SCHOOL

The first output from the premedical program to consider is that to the high school. On the diagram outputs from the medical school and the community doctors to the high school are included also. Since the high school years are probably the most vulnerable years to sell a student on a career in medicine, the question arises as to who should do this selling job. Colleges prepare students for many careers. Thus they should not sell any one career. The logical groups to do this selling job are the medical school and the community doctors. Currently, this selling job is especially important to minority high school students.

Although colleges should not sell any one profession, they do have a responsibility to indicate clearly the opportunities that are available at their college to pursue the path necessary to prepare for a particular profession. How should the colleges do this? One obvious way is to describe adequately the opportunities for pre-professional training in college catalogs. In a quick survey of several California college catalogs the amount of information about premedical programs appeared to vary inversely with the size of the institution; the catalogs of several campuses of the University of California had little, if any, information; state college catalogs gave considerably more information; and the small liberal arts colleges had the most useful information. The first recommendation to premedical advisers is to be certain that the opportunities for premedical training are adequately described in their college catalogs so the prospective students will know what to expect and to whom to go for help.

An extension of a thorough coverage in the college catalog is the preparation of a brochure on premedical training which can be given to any interested, prospective student. One area where this service should be helpful is in the

THE INPUTS AND OUTPU OF PREMEDICAL PROGRAMS


PRE-MED ADVISERS GROUP
A A M C
HIGH SCHOOL
COLLEGE PRE-MEDICAL PROGRAM
MEDICAL SCHOOL
ALUMNI
COMMUNITY MEDICAL DOCTORS

recruitment of minority high school students to the field of medicine if it can be coupled with information from medical schools about the opportunities for minority students in medical schools.

An additional service premedical advisers could provide to high schools is to give their year old copies of the AAMC book, "Admission Requirements of American and Canadian Medical Schools", to high school counsellors who may not have a copy.

ALUMNI

One might ask the question, "Why should the alumni be included as a group which interacts with the premedical program?" One function which the alumni can serve is to provide a means of feedback about the characteristics of different medical schools to the premedical program. With the current ferment in medical education probably only the most recent graduates from college are especially useful in this respect. Alumni who have settled close by their undergraduate college may be willing to visit their alma mater and talk with premedical students about medical school and the medical profession.

A mechanism for keeping the relationship alive between the alumni and the premedical program is by an alumni newsletter. It is my belief that some college alumni can be brought in closer contact with their alma mater through departmental alumni newsletters than through general alumni bulletins since for many alumni their closest ties are with the area of their major work. We started such a newsletter this year at Pomona College. Several letters were received back expressing interest in the concept of the newsletter and in helping our premedical program. Since medical doctors include M.D. after their names our alumni office was able to supply a fairly accurate mailing list. An additional useful service that the mailing list served was to make available the addresses of fellow Pomona M.D. alumni to a doctor who was looking for a location to set up a practice.

COMMUNITY MEDICAL DOCTORS

Although many premedical students come from backgrounds that include doctors in the family, many do not have a real feeling for their future profession. The local community doctors can help in this area by "telling it like it is" to the premedical students. A mechanism to do this is by inviting local doctors to group discussions in faculty homes. In order to be effective these groups must be kept small. The presence of a second doctor such as a college physician can be helpful to keep the discussion moving. In the process of these discussions the doctor learns something about the current premedical program at the college.

MEDICAL SCHOOL

I would like to turn now to the place of primary interaction - the interaction between premedical programs and the medical school. Although there are many possible areas of interaction which can be discussed let me start with one which can't be avoided - the process of submission of letters of evaluation. According to the reports about the American Medical Colleges Application Service which will provide a centralized application service, letters of evaluation will still be submitted directly to the medical schools. I believe that letters can and perhaps should be handled by the central office. For several years we have been preparing one master letter for each applicant and then sending Xerox copies to the medical schools. The central office could do this just as easily and probably with less confusion. On several instances this past year, we sent letters of evaluation which were apparently not received by medical schools and had to be resent.

Until a centralized service for letters of evaluation is established, I would like to make two recommendations. First, I would recommend that all medical schools acknowledge receipt of all letters of evaluation. Some schools are very prompt in acknowledging receipt of letters whereas others never indicate receipt to the Committee or the student. If all schools followed this practice a second letter could be sent if an acknowledgment was not received within a reasonable length of time. Second, I would recommend that a listing of all medical schools with the proper office or person to whom to send the letters for quickest receipt be prepared by the AAMC. Included with this listing, which should be sent to all premedical advisers, could be comments on what most medical schools expect to find in letters of evaluation. Especially useful would be comments on how to discuss the more touchy subjects such as disciplinary problems, psychological problems, etc., without making one feel that he may be preventing the acceptance of an acceptable applicant by mentioning these subjects.

Because of the increasing importance of letters, especially as colleges introduce more pass-fail grading, honor courses, special sections, etc., medical schools must become better acquainted with more undergraduate colleges so that they can better interpret the letters of evaluation from different colleges. Personal contacts must increase. More medical school admission personnel must visit more colleges and more college premedical advisers must visit more medical schools.

I would like to present now an idea for consideration by medical schools based upon a practice that our college has found helpful at the high school-college admissions interface. For each of the past two years, our admissions office has had one high school counselor, on leave from his high school, work in our admissions office. His work included making many visits to high schools to recruit students. Perhaps similar arrangements could be made between medical schools and premedical advisers willing to take a year's leave of absence from their colleges. These people would be actively involved in the admissions work, perhaps doing some of the recruiting and interviewing for a medical school at colleges. Although a person in this position must consider himself a member of the medical school staff, he would still be a college premedical adviser; he could thus serve an additional function by providing a path of communication among premedical programs. People who have been involved on both sides of the medical school admissions process may be able to provide some new insights into the problems at the interface.

Another place where increased communication would be helpful is in the area of reports from medical schools back to the colleges concerning the status of applicants. Some medical schools are very good about sending back reports while others are never heard from. I was impressed recently by one report which told at which stage of the application procedure a given student was rejected; i.e., discouraged on preliminary application, rejected on formal application, or rejected ter interview. As much information as a medical school is willing to disclose as to when and/or for what reasons an applicant is rejected is useful information to premedical advisers as an aid in advising future premedical students. The main tragedy of the medical school admissions process is the large percentage of rejected applicants. If more prospective applicants who stand essentially no chance of admission could be persuaded not to apply, all would benefit; the medical schools would have less unqualified applicants to consider; the premedical advisers would have fewer letters to write; most importantly, the students would be able to make more realistic plans in other directions and would not have to endure the frustration of waiting to be rejected.

PRE-MEDICAL ADVISERS GROUP AND THE AAMC

I suppose that it is only natural for an organization of premedical advisers to begin in the Northeast and then for the idea to be picked up by a group in the Midwest before reaching the West. To show that we in the West are not lagging too far behind, I would like to propose that the premedical advisers in the West form a similar organization and that the first meeting of this group be held in the Spring of 1970 in conjunction with the meeting of the Group on Student Affairs of the Western Region of the Association of American Medical Colleges. This group has already invited premedical advisers to attend part of their meeting. Since I am proposing this organization, I will assume the responsibility to write to the premedical advisers in the Western Region to ascertain the interest in an organization of premedical advisers. If positive interest is shown, I will obtain the assistance of several other premedical advisers to set up a joint meeting with the GSA.

Before discussing possible connections between the AAMC and premedical adviser groups, let me mention the direct connection between premedical advisers and the AAMC - individual membership in the AAMC. The dues are only $20 and it is legitimate item to include in the premedical program budget. As a member you receive the Journal of Medical Education, the Datagram, and the Bulletin of the AAMC. These publications contain many items of direct interest to premedical advisers and help to keep one abreast of the current trends in medical education.

How can the AAMC assist in the formation of a nationwide group of premedical advisers? The AAMC should act as the coordinating body among the various regional groups that are now starting. The most advantageous time for premedical advisers groups to meet is at the same time that GSA groups meet. The professional representative from the AAMC at these meetings is the logical person to serve as a liaison among the regional groups. Eventually, when a nationwide premedical advisers group is formed, it should become affiliated with the AAMC to allow for the best coordination of activities, and to prevent duplication of effort.

CONCLUSION

Some of the inputs and outputs discussed may not be necessary for the successful operation of an individual premedical program. But as the diagram illustrates, the more lines of interaction there are between a premedical program and other groups, the stronger it should become. The stronger the program becomes, the stronger should become the premedical students. In the long run this should help to turn out better qualified doctors and to improve medical care in this country, which is the basic reason for concerning ourselves with interactions between premedical programs and medical schools.

COMMUNICATION AND CONTINUUM:
A MEDICAL SCHOOL RESPONSIBILITY

Paul R. Elliott, Ph.D.

We are, in the year 1969, enveloped if not innundated with a kaleidoscope of changing ideas in the health industry. We see around us new educational and curricular models, increased flexibility of medical education, multiple education pathways at some medical schools and different developing pathways at different schools. We also see emerging models for health care delivery, uneven scientific and technical advance in medical specialties, demands for scientifically competent physicians and demands for the general practitioner of the 1920's. We are told we have a massive deficit in health-care personnel, and at the same time large numbers of competent students find no place in our medical schools. We also see the secondary and college preparation of preprofessional students undergoing significant change. Some say the chemistry major is the doctor of the future, others say it's the engineer or the computer specialist, and still others say it's the social scientist. The students of our colleges and medical schools have new demands, and most of them are reasonable. The nation demands more services of the medical schools, and most of those demands are reasonable. We all hope that in the midst of this chaos of change is some reason, and that the emerging patterns of premedical, medical, and post-graduate education will be improved, exciting, and will be relevant to our society's needs.

Meanwhile, the medical admissions committee tries valiantly to predict the necessary characteristics of the physician of the future - an impossible job. And the premedical advisor strives even more valiantly to interpret the desires of the medical admissions committees of a number of schools - an even more impossible job.

The answer is clear: communication may not be sufficient but it is certainly necessary; at all levels and in all possible directions. It is the thesis of this short presentation that the primary responsibility of this communication lies with the medical school itself, and to this I would like to direct a few comments.

The two obvious direct lines of communication are the preprofessional evaluation by the undergraduate college which is directed to the medical admissions committee and the feedback of information from the medical school to the undergraduate evaluation committee and to the premedical advisors.

Viewing first the role of the evaluation committee, it is interesting to note[1] that a recent Association of American Medical Colleges survey indicates that 91% of all medical admissions officers prefer letters from a committee or a faculty member representing a committee which is able to evaluate that undergraduate institution's entire applicant pool. As stated in the article:

> "Subjective committee evaluations have become increasingly important to admissions committees, particularly with such recent developments as the pass-fail option which makes objective evaluations more difficult."[1]

The role of premedical advising and evaluation will, I am sure, be covered by other speakers, but I feel it is worthwhile in this context to repeat one of the recommendations of the Conference on Preparation for the Study of Medicine[2]: "That colleges and universities by encouraged to establish long-term, stable support for premedical advisory systems".

Assuming that such support is either existing or will soon be at colleges and universities around the country, I would like to turn my attention to the responsibility of the medical school in supporting the system of feedback communication which can make the job of the advisor and the evaluations committee a more responsive one. Specifically, we should consider the kinds of information that are useful, the mechanism of feedback, and the lines of communication.

PERTINENT INFORMATION

1. The most immediately valuable information to the preprofessional advisor is that regarding action taken during the application period relevant to the students from his undergraduate college. There would appear to be little excuse for the medical admissions officer not sending a copy of applicant correspondence to the student's advisor. In the day of the Xerox copier, this is a minimal effort and certainly not very costly. As a preliminary suggestion, the medical school might add just one blank to its application form as follows: "Name and Adress of Preprofessional Committee Chairman ________________". This name, or the name on the preprofessional evaluation form, would be the recipient of such information.

2. The A.A.M.C now furnishes to the undergraduate college three annual reports concerning their students:

   a. Applicant Activity and First Year Accomplishment Report, which includes for each applicant the number of applications, acceptances received, if any, the school he entered, and his first year performance.

   b. Four Year Medical Student Accomplishment Report, which names each alumnus who entered medical school four years before and his performance for each year involved.

   c. MCAT Averages and Score Distributions, which are a series of reports providing a statistical summary and interpretation of the performance of the students from that college taking the MCAT test during a given period of years.

This is valuable information for premedical advisors and its continuance is strongly recommended. I feel, however, that the medical schools should supplement this information with more detailed annual reports to the respective undergraduate colleges concerning the performance of their accepted students, and at least a minimal review as to why the rejected or deferred students were not accepted. If the advisor is going to be able to help his students select appropriate schools, it is important that he be able to judge his recommendations against performance of previous students at a particular school. Only the medical school itself can furnish the information necessary for this judgment.

3. Long range information that should be relayed to the undergraduate premedical committee or advisors includes:

a. An in depth interpretation of the requirements for admission. This does not imply a repeat of what the medical school says in its catalogue. It means an interpretation of the philosophy of the admissions committee. I would suggest it might even be appropriate to communicate the composi- of each class; including individual gradepoint, major, undergraduate college, MCAT test scores and other relevant data. One would, of course, leave out the individuals' names.

Maybe it should be presented in some form such as average G.P.A. and average MCAT subsection score with the range of each. Another example of useful information would be the following:

Students: 64
Completed Physical Chemistry: 21
Completed Quantitative Analysis: 35
Completed 1 year Calculus: 42
Completed 2 Psychology Courses: 27, etc.

It is certainly unfair to say in the catalogue that calculus is only recommended, and then have the admissions committee use the math background as a significant criterion. I realize this will bring howls from admissions' chairmen, but I think the information would be exceedingly valuable to professional committees - at least in some form.

b. Information on the internships matched for the graduating seniors of medical school. These data would be valuable in assessing the strength of given clinical departments.

c. Information on course and curricular change, not prior to such changes, but as soon as approved. Such information would allow the premedical advisor to assess for himself the relevance of certain undergraduate courses for his students, and the relevance of certain medical schools for particular types of premedical students.

d. Information on the use of advanced standing or advanced placement by the medical school. If Course X at School Y generally gives the student advanced standing for Course A at Medical School B, then I think both the premedical advisor and his students should know this. After all, the information will feedback by student to student contact, why not make it available as general information?

e. The composition of the admissions committee: number, backgrounds, minority or community representation, practicing physicians, undergraduate college faculty, etc. This information would help the professional committee in writing its evaluations and in trying to match its students.

f. The type of interview: whether by individuals, or committee, one or more students at a time, length of interview, and whether other events occur such as open discussion with the admissions committee. This is a high anxiety area for the premedical student, and information available to the preprofessional advisor would or could help make it a more pleasant experience for the student.

There are more communication ideas I could list. As a premedical advisor I can think of information that would be valuable. As director of the evaluation committee I can think of other sorts of information that would be most helpful. As a member of an admissions committee I know of information that is confidential and therefore should not be released. There is no doubt however, that medical schools could provide more information that would aid their undergraduate counterparts in this important job without compromising anyone's position.

Essentially, it is a matter of the medical school viewing the premedical advisor as an associate; and treating him like one. Only then can the two - directional flow of information so essential to the student's career be freely and honestly evaluated. If the selection of medical students is not an exercise in windmill tilting, then it should be worth the effort to make the best possible selection of those who are to study medicine.

It is quite clear to me that if premedical advisors are treated as associates, they will more readily recognize the position of trust and importance which the medical schools want them to accept. In addition, the universities and colleges are more likely to select highly qualified staff for that job, and to set up a premedical advisory-evaluation office on a permanent basis.

CHANISM OF FEEDBACK

Mechanisms of communication feedback are easy to come by; all they take is effort or money - and sometimes both. It is here that the responsibility of the medical school becomes more clear; especially in regard to the small liberal arts colleges.

A sincere effort should be made to establish as many lines of communication as possible, including all of the following:

1. Direct written reports to the preprofessional office, advisors, committee, or whatever exists on a particular campus.

2. Regional premedical advisor meetings, preferably in association with the regional AAMC-GSA meetings. Some of these should take place at undergraduate colleges rather than at medical schools; possibly on alternate years.

Further, I feel the regional premedical association should be partially or totally funded by the medical schools in the region.

3. Local meetings at individual medical schools where premedical advisors from the schools which furnish most of the students for that medical school are invited annually or biennially for serious discussion of mutual problems. Again, the financing of such meetings including travel funds, should be furnished by the medical school where necessary.

4. Visiting Professor Programs where medical school staff (including admissions officers) are made available for 2 or 3 day visits to the undergraduate schools to give seminars, talk to students and faculty and generate the personal relationships which are important to effective communication.

5. Student to student programs where medical students visit high schools and undergraduate schools for direct student to student contact. Often, the medical students can help the advisor stimulate and answer questions for the premedical students better than the medical faculty can.

LINE OF COMMUNICATION

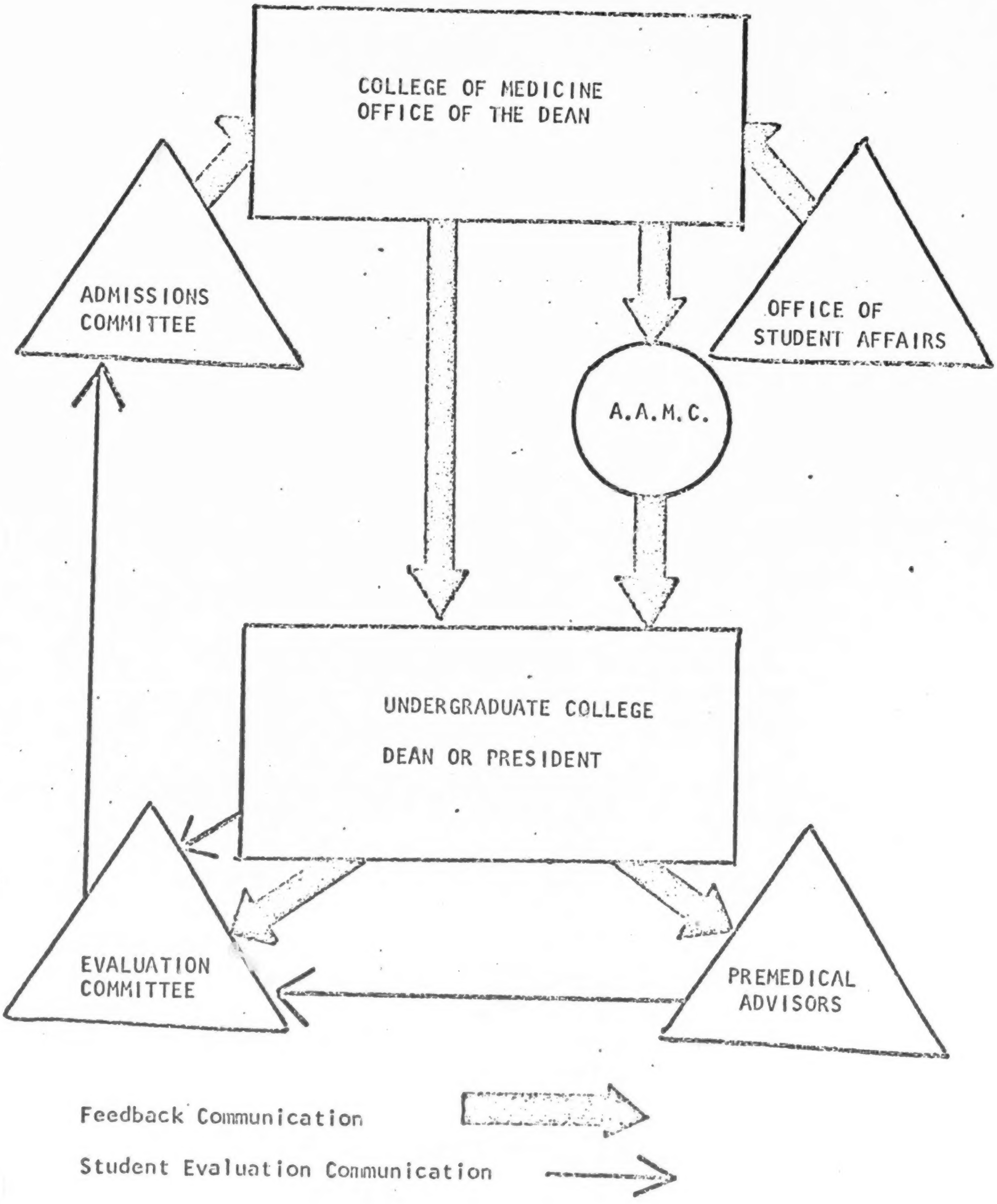
As a final note, it should be pointed out that one responsibility of the premedical committee and advisors is to help establish the line of communication by identifying the various staff on the undergraduate campus involved with premedical work, and by describing the communication lines between such staff if the campus is a large one.

An example of a simple and effective communication line between medical schools, the AAMC, and the undergraduate colleges is shown in the appendix.

All that remains is to make effective use of the communication lines as shown. And I will repeat once again; the primary responsibility for this mmunication lies with the medical school.

Appendix

Communication lines between a Medical School and a large university.


COLLEGE OF MEDICINE
OFFICE OF THE DEAN
ADMISSIONS COMMITTEE
OFFICE OF STUDENT AFFAIRS
A.A.M.C.
UNDERGRADUATE COLLEGE
DEAN OR PRESIDENT
EVALUATION COMMITTEE
PREMEDICAL ADVISORS
Feedback Communication
Student Evaluation Communication

References

1. The Advisor, Vol. 8; May 1969. Association of American Medical Colleges, Evanston, Illinois.

2. Littlemeyer, M. H., and R. G. Page; "Conference on Preparation for the Study of Medicine". Journal of Medical Education; 42: 965 (1967).

DR. SIMON:

I think we can come to the final phase of the meeting. We have heard from every region but one, that being the Northwest. One of the reasons we moved the meeting this year to this later date was so that we could be sure to have a representative from Washington here. We believe the problems we face have regional overtones, and the Northwest has its own peculiarities.

Dr. Schwarz, who will speak on "The Present Status of Premedical Advising in the Pacific Northwest," is uniquely qualified to focus our attention on this region.

THE PRESENT STATUS AND FUTURE OF PREMEDICAL ADVISING IN THE PACIFIC NORTHWEST

M. Roy Schwarz, M.D.

The Pacific Northwest which includes Oregon, Idaho, Washington, and Montana, is uniquely different from the remaining secotrs of the United States for a number of reasons. First, on the 394,000 square miles enclosed within these state boundaries, only slightly more than 8 million people presently reside. Second, of the 8 million people, slightly less than one-fourth are located in the metropolitan centers of Seattle and Portland. Third, the geographical terrain provides for a variety of occupational pursuits including logging, farming, fishing, and raising beef cattle. Fourth, as a consequence of the above three factors, the students of the 33 colleges and universities of this area originate predominantly from small high schools and possess avid interests in outdoor sports and related activities. A major consequence of such backgrounds is the "cultural defect" that these students possess when they enter college. Such students' scientific and mathematical backgrounds may also be deficient when compared to similar students from other western states. These academic inadequacies require, therefore, curriculae which emphasize both the sciences and humanities. Since the press of time mitigates against broad and in depth exposure in both spheres, the majority of premedical programs emphasize science in the belief that of the two, science is of the more important to the future physician. As a result, a defect in the performance of these students in the Verbal and General Information sections of the Medical College Admission Test is routinely observed.

With an appreciation of the general background of the premedical candidates in the Pacific Northwest, it is possible to proceed to a discussion of premedical programs in the institutions of the four states. Of these, Montana produces 35-40 candidates per year from the five institutions with recognized premedical training programs. Montana State University and the University of Montana produce 20-25 of these candidates. These two state institutions have student bodies of approximately 7,000 people and offer the interested student a premedical major leading to a Premedical Degree. Ten to 20 percent of their candidates, however, choose an alternate major as a safeguard should they not be admitted to medical school. In the private sector of higher education in Montana, Carrol College, a Roman Catholic institution of 1,000 students, currently operates a premedical program containing 60 candidates in the four classes. This institution, which is representative of other small private schools, produces about ten aspirants for medical school each year. The majority of these have majored in biology or chemistry. In all institutions of Montana the students come predominantly from middle class backgrounds. Few, if any, minority or disadvantaged students have currently indicated a desire to study medicine.

In the state of Idaho with its three state-supported and three private "feeder" institutions, the University of Idaho at Moscow has the largest number of premedical trainees. Under the guidance of Professor J. Irving Jolley, the majority of the 10-15 students that apply to medical schools each year emphasize chemistry, mathematics, and biology in their Premedical Major. In contrast, Idaho State University (I.S.U.), which contains the state's School of Pharmacy, produces 5 applicants per year with biology or chemistry majors. While the University of

Idaho and I.S.U. are currently the most widely recognized of Idaho's schools, the institution of the future in the Gem State may well be Boise State College (B.S.C.). Legally designated a 4-year college in 1967, this former 2-year junior college currently enrolls 5,200 students or nearly as many as its two sister institutions. Because B.S.C. is located in the most populous and rapidly growing area of the state, it has occupied a major role in the preliminary planning for a medical school in Idaho. Coupling these observations with a respectable curriculum in biology and chemistry, the potential for a fine premedical training program is a very real possibility.

Among Idaho's three private institutions, which includes Northwest Nazarene College and Ricks College, the College of Idaho (C. of I.) enjoys a most favorable reputation. Located in Cladwell, C. of I. boasts a student body of 900. Of these students, 30 indicate medicine as their career choice and the majority obtain a Bachelor of Science degree in biology under the able guidance of Professor Lyle Morris Stanford. Because of the small student-to-faculty ratio and because of the commitment of the faculty to instructional excellence, C. of I. possesses an enviable record for the placement and success of her 4-8 graduates who each year enter medical institutions. C. of I., together with the other institutions of higher education of Idaho, therefore, produce 20-30 qualified applicants per year. Only infrequently is there a member of a minority race included in this group.

The state of Oregon contains at least 8 communities of higher education which offer premedical training programs. From these, approximately 150-175 students make application each year. As the programs at the state-supported institutions are, in general, similar to those of the state of Washington, they ʼll not be discussed. In contrast, among the private institutions, Reed College stands out as being unusual in many regards. First, in its student body are representatives from every section of the country and all socioeconomic classes. Second, of the 1100 scholars at Reed, approximately 50 indicate a preference for medicine as a career after their Freshman year. Of these, 10-15 apply for admission each year, indicating that few, if any, candidates change their mind during the latter three years of study. Third, on an average, 25% of the students who apply are nonscience majors. In spite of commendable performance, once admitted, these "broadly educated" candidates have experienced severe difficulty in gaining admission to medical schools in the past two years. Fourth, for the students of science, the majority of whom are biology majors, a unique opportunity exists for participating in original and independent research under faculty guidance.

The final state in the Pacific Northwest is Washington with its 14 institutions ranging in size from 1000 to 33,500. Of these, nine are small private institutions of less than 3,000 students which produce 60-70 applicants per year. Of the private schools, eight are affiliated with religious orders and two are recognized as having in the past consistently produced quality medical students. These include Whitman College (private, nonaffiliated, 1,000 students) and Pacific Lutheran University (2,600 scholars) where the majority of the premedical candidates have graduated with a major in chemistry or biology.

The five state-supported institutions of higher learning in Washington include three state colleges and two universities. Each of the colleges, with enrollments of 6,000 students, produces only 2-6 premedical candidates per year as the majority of their students enter public school teaching. In contrast, the University of

Washington (U. of Wn.) produces 70-100 applicants per year from its vast student body of 33,500. It should not be surprising that premedical advising at the U. of Wn. suffers the severe problem of depersonalization which is so commonly a major problem at large institutions.

Of all the colleges and universities in the Pacific Northwest, Washington State University (W.S.U.) enjoys a pre-eminent reputation as a premedical training center. This institution, which enrolls 12,500 students in undergraduate and graduate studies, is located in the fertile wheatland of eastern Washington and produces 30-40 premedical candidates per year. The majority of these future physicians major in Zoology under the able guidance of Professor Herbert L. Eastlich. In the past, the percentage of candidates being admitted has reached 80-90% of those applying. In no small part, this enviable success relates to Professor Eastlich, who with 30 years of experience, demands from his students the highest standards of excellence while imparting an endless supply of encouragement and homespun philosophy.

From the figures presented above, it is apparent that the Pacific Northwest produces 360-390 qualified applicants per year for the 174 positions available in the entering medical classes at the University of Washington and the University of Oregon. The premedical advisors are then faced with the major problem of finding positions outside of the Northwest for the majority of their students, as well as preparing students for alternate career choices should they not be admitted to medical school. This is especially critical for those candidates from the WIHCE states of Idaho and Montana which do not have medical schools. More recently, the competition for positions has been increased by the influx of students who otherwise would have entered graduate studies but because of the draft deferment available in medicine, choose to pursue M.D.-Ph.D. programs. This situation requires the premedical candidate to fulfill the not infrequently dissimilar entrance requirements of the many medical schools to which he will apply if he is to be as assured of success as possible. Couple this state of affairs with the oft printed suggestion that medical students must be broadly educated in the arts and the humanities and the premedical advisor faces a nearly overwhelming task. Posing an additional burden to these overworked and under-recognized auxillary arms of the Admissions Officer is the communication gap between the medical schools and the undergraduate institutions that all too often exists.

In the Pacific Northwest it is clear that in the future a number of changes must occur. First, a greater degree of interaction must evolve between medical schools and premedical advisors concerning admission policies, curricular developments and the scholastic progress of their students. Second, the number of positions in the medical school classes must be increased, possibly through region-wide planning which crosses state boundaries. Third, an attempt must be made at defining a more uniform set of entrance requirements for the premedical students. Fourth, and most important, attention must be given to training disadvantaged students. This is especially critical for the American Indians who are only infrequently found on the campuses of the Pacific Northwest and virtually never enter medical school. In this regard, the medical schools of the Pacific Northwest also have a responsibility for Alaska with its large population of Eskimo-Indians. Only with such innovations can the health requirements of all citizens in the Pacific Northwest be significantly improved in the future.

DISCUSSION

MEDICAL SCHOOL INTERACTIONS WITH PREMEDICAL ADVISERS

Panelists: Alvin Beilby, Ph.D.
Paul Elliot, Ph.D.
William Hexter, Ph.D.
Bernard Nelson, M.D.
M. Roy Schwarz, M.D.

Moderator: Harold J. Simon, M.D.

DR. SIMON:

Dr. Nelson, would you like to start the discussion?

DR. NELSON:

Well, as Chairman of Admissions, I can't help but respond to some of the requests for information. I appreciate how legitimate they might be from the standpoint of the premedical advisors. Responses of this nature, and to this extent, are going to be difficult to come by with the existing resources of the medical schools. I keep relating my own experiences, but this year we had about 3,400 people who inquired about the medical school at Stanford. Eventually we received 1,500 applications, and this represented an input from 326 institutions. I am sure it would be gratifying to the premedical advisor to know what has happened to his students, but these numbers of applicants present real problems. We have sometimes tried to inform the premedical advisors about the actions of the committee, but it is often difficult to identify the appropriate contact person in many institutions.

I think that you will probably find that medical school people are considerably more sympathetic to the problems of the premedical advisors than you might think. Many of us write internship letters and are faced with the same problem. We are trying to get some feedback, as we would like to know how our evaluations are received by others.

This year, our committee interviewed 800 plus of the 1,600 people who submitted completed applications, this being roughly the number considered qualified from an academic standpoint. We conducted about 1,100 personal interviews with these candidates all across the country. I can only say that if you want to know why some of them didn't get in, there is a host of factors that are weighed by the Admissions Committee at this point, and it is very difficult to say why any particular student did not gain admission. They are competitive and academically qualified. You would have to try to explain the individual prejudices of the Committee members, the impressions the student makes on interview, and weigh all of these with the more objective factors.

Even then, it is extremely hard to provide answers as to why a particular candidate did not gain admission.

I think that it's reasonable to talk about more quantitative criteria, the grade point average of the student, MCAT scores, and so on, but I don't think that our Admissions Committee any longer feels that the grade point averages, MCAT scores, and such things are really so critical in determining who gains admission to medical school. I would also like to play down what I too often hear from premedical advisors. They are quoted as saying that a student should apply to this school if he has a grade point average of 3.4, and had better not apply to the other school if it is less than 3.6. I really think that is doing a disservice to the applicant. There are many students who may not have a very high grade point average, but who have been able to demonstrate their competence and their abilities in very special and unusual ways.

I don't think any longer that we at the medical schools are trying to send the message out that we want people who are completely qualified in all grounds. There are humanists; there are literary experts; there are also the scientists. There are people who have strengths in individual areas, and these are the people we would like to attract to Stanford. I think that many of the medical schools try to follow this policy.

I think the students in the South feel very strongly, when I talked to them, that too many schools play by the numbers, and we would like to dispel this impression. I think it is true that there are students whose academic records are so poor that, relatively speaking, they merit no consideration. I think that's the only function of the preliminary type of application. This applies to students who have received negative advice, or from schools where the premedical advisor does not exist. The preliminary application will do that screening service. Otherwise, I think the preliminary application is potentially a poor way of evaluating applicants. Surely, the minority applicants would never get past the preliminary screening, and this is just one evidence of the need in our school to ask all the students who are interested in going to medical school to file the complete application.

Although I'm very sympathetic to the desire for further information by the premedical advisor, I'm not sure how realistic it is with respect to the present resources at our school, or the resources at most schools with which I am familiar. I think we have to keep working at it. I think that the important contact is the contact between the various people who attempt to represent medical institutions, and those people who are serving as premedical advisors.

If you want to know the characteristics sought by our Admission Committee, I think I can tell you what they are at the end of any one admission season. I would not want to make any prediction as to what they are going to be like the next year, since the Admission Committee changes, and its attitudes change.

I do not get a clear message from the faculty that they think our admission requirements are very meaningful. There are also some students who wonder why we admitted them, but they're very happy they're in.

It is really very difficult to follow through on some of the questions bout an analysis of what the medical schools are expecting, what they accept, and what they are going to do.

Finally, I would like to sum up all of my comments about what we're looking for in students in medical school - I think we're looking for potential. All of the students change very dramatically in their interests, and the rates by which they grow. We find this in medical school, just as I'm sure you do when you're advising premeds. This makes the whole business of saying we are looking for a particular type of student very difficult.

We know that students feel it's appropriate for them to tell us they are interested in research, because that's the kind of school we are. We also know that, when they've been at Stanford a couple of years, they come and tell us their interests have changed, they weren't really interested in research.

I can express a lot of sympathy for the problems of the premed people. I suppose that, in getting together in meetings such as this, we can try to transmit back and forth as much information as possible. We keep trying to provide better information both for the students and for the premed people, and try to keep them advised of the status of their applications. It all comes back to the fact that we don't have the resources to do it, and we can only keep trying to do better. But the 1,600 applicants we had this past year represent a two fold increase in a period of about three years. I would not be at all surprised if we had 2,000 applicants next year, and this is just going to get worse.

DR. WHEELER:*

It seems to me that Dr. Hexter has expressed the desire which I am sure the rest of the premedical advisors share. If possible, they wish information about why a particular student is not accepted. I found Dr. Nelson's answers very true to what I think the situation is in a number of places, but I also find it very disturbing. Aside from the logistic difficulty in providing this information, the criteria are too nebulous and too subjective even to define. In fact, he also mentioned that they vary from year to year with the Admissions Committee, and I would submit that the problem is far worse than that; that is, that they vary considerably during the course of even one year.

Admissions Committees are making ad hoc decisions as the year begins. As the year progresses, as the number of acceptances increases, as the character of the applicant pool changes, and after the Admissions Committee has seen more and more people, the criteria change, and change as much within a given year as they do from year to year - at least they do in our institution. I think we should try very hard to define our criteria more precisely.

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*Dr. Henry O. Wheeler
Department of Medicine
School of Medicine
iversity of California, San Diego
La Jolla, California

This reminds me a little of the anarchy that existed in the internship selection business prior to 1952. That problem was at least partially solved by a national matching program. The problems involved in applying such a program to the selection of medical students are obviously very great, and quite different from the internship situation, because there are so many more applicants than there are spaces. In fact, the situation is quite reversed from the internship situation. Yet, perhaps, there are ways of dealing with this, and I'm sure that all of you have thought about the possibility of some sort of matching program. I'm wondering if anyone on the panel would like to say anything about that. In my view, it would certainly be worth working toward.

DR. NELSON:

I personally favor the development of some type of matching program. I think it's very reasonable. I think it's particularly reasonable with regards to minority students, and this may be the group that you'd want to start with. I strongly favor such a program.

DR. LIEBESKIND:

What is a matching program?

DR. NELSON:

A matching program is one in which the student rank orders the institutions which he would like to intern, and the hospitals rank order the students who apply to them. The computer matches them up so that the student goes to the institution he ranks highest. Matching has certainly proved to be of major benefit to most of the students and hospitals.

But, if we look at our students, we will have 800 or so who are academically qualified, who seem to want to come to Stanford. We think they could be trained to become very good doctors. How do you sort out from this group those whom you want to favor with admission? I think it makes us all feel very uneasy, and it could be that we could work through some sort of matching program, but I'm not sure it would come out very differently.

DR. EPSTEIN:

I'm going to speak directly to this point.

With the current experiments in minority group student admission - if four years from now we find that this group of students get through with the same distribution of successes, what does this mean? Because if you throw out academic acceptability criteria for some, why not for all? If most applicants don't have to be classified as academically acceptable, you might as well chuck out the whole business of what constitutes minimum acceptability and start all over.

DR. NELSON:

As you know, you can't correlate the performance of students in medical school very well with any of the criteria used for selecting students. I think many schools will now study very carefully the quality of the graduates in relation to the admission criteria employed. This is now done only in part. Most have limited their correlations to MCAT scores and undergraduate GPA, and some aspect of performance in medical school, with not very encouraging results.

DR. EPSTEIN:

Our Dean first goes through all the applications and then, based on a numerical score cut-off, presents the survivors to the Admissions Committee. I wonder if a special minority group committee should not be established, since a significant number of minority group applicants would not fall into the numerical range for consideration. In fact, it might be better for all if we would discard the numerical cut-off point entirely. It really makes no sense anymore.

I would ask the premedical people to identify for us any student who has exhibited a characteristic or characteristics not directly convertible into numerical scores, such as leadership or any other quality that you care to name. There ought to be a way of identifying that student at the first application screen. This would avoid the fate which may befall the unusual candidate. If we are forced to go only by the numbers, he may be overlooked at the initial point, and we may never find out that he was a great student leader, or did something that you think was really remarkable. There must be some way to identify that student, to supplement the numbers, to look at this fellow from the point of view of what he has done that merits special interest. I think this is more in keeping with what we are going to be doing in the next few years, rather than continuing to have the numbers predominate.

DR. NELSON:

I agree. And that's the reason why we no longer use the preliminary application. We haven't used it for the past three years. All you really get in preliminary applications is numbers.

Many students who were rejected on preliminary applications said, "All you go by is numbers, and you don't go by anything I have done." On the other hand, there is great variability in the quality of information we receive from premedical advisors. Some premedical advisors are good, and the committee learns to respect their advice over a period of years. But there are some places where the student doesn't even have a premedical advisor. You might get three or four letters of recommendation from different people. Then you are faced with the situation of having 1,500 different people recommending students and you have no way of evaluating the quality of their advice. These are very serious problems.

DR. MENDOZA:

I have several comments I want to make that have come to my mind from observations made over a number of years, and there is obviously not much time to discuss them. At least I want to list them for you, and show you what have been some of the problems on my mind in the many years of premedical advising that I've done. I'll list them quickly and briefly, because I know the time is getting short.

One: I'm really concerned about communication, but I'm not going to go into that except to mention one thing. I think it would be very helpful to the premedical advisors if the medical schools could tell us at the end of the first year how our students did. Now this does not involve 1,600 people. We would know better how to adjust our evaluation to your evaluation in medical school, and it would guide us in sending you better students, more appropriate to your particular needs. That, I think, could be done without creating too many problems.

Another problem: The question of the purpose of the liberal arts preparation is to me a very serious problem. Medical schools generally say they want the well-rounded student, and write about a growing emphasis on a well-rounded liberal arts student. Then we get this growing emphasis on increasing the number of science courses. This may be fine, but you men have to tell us what you want.

I tell my students at Grinnell College - some of you don't know where it - it's in Iowa, and I don't have any beautiful pictures to show like Dr. Schwarz did - I tell them not to go into courses they are going to get in medical school later. Now the picture is evidently changing, and you want us to give a lot of sciences. The students have to know, and we have to know what you want. I'm prepared to go as far as anybody else, within reason, but this is a very serious problem for the premedical advisors and the students.

Now, other problems that I have here, very quickly:

What are you men going to do with pass-fail grades? They are increasing in frequency. Do you want these to be limited only to elective courses, or will you permit them in required courses such as organic chemistry and so forth?

Another question has to do with the placement problem. Are you going to accept our decisions, or are you going to go to interviews and tests. We receive some letters saying you will not accept advanced placement from high school in lieu of the college work that you want. That's a very serious problem.

Another problem that has been bothering me recently has been the matter of single interviews. I've had some experience in this in the past. Some medical schools have one man who goes out in the field and sees some of the applicants. Now if, by chance, he is a good man and does a good job, that's fine; but, if by chance he does not do a good job, then you have four or five students who have been blackballed because they did not get along well with at particular interviewer.

Another problem we have is the leveling of grades. At some institutions, for example, our C-plus grades are leveled to C. These plus grades are meaningful to us, and are significant; to us, a C-plus student is not a C student. Yet, in many cases, the grades are just leveled off at the next lower - never at the higher - level. This is a problem for many students and indeed we changed our grading system to give our premed students and potential graduate students grades that will transfer better.

Another problem is the national importance of the MCAT, the inordinate amount of significance given to the national norms. Many universities say they don't use it, or that they don't rely entirely on it. The fact of the matter is that I can give you an example of a boy who was an exceptional student, almost brilliant, who was turned down by a medical school because he was only at the median in the national norm. To me, this is a very definite mistake.

One last point. I am amazed sometimes to see how a poor undergraduate record hangs on like a prison record. Consider the young student who has done poorly in his undergraduate work for any number of reasons. He then goes on to graduate school, straightens out and wants to enter medical school. At this point he is relegated into that odious category called the applicant "through the back door" into medical school. There are cases where the applicant is capable and competent and should enter medical school. I know of one with a Ph.D. in Biochemistry who is still being rejected because of his undergraduate record. I have seen several such examples.

These are some of the problems that I've encountered which deserve at least some consideration by this group.

DR. NELSON:

I think all of the problems that you bring up are problems that we're trying in some way to solve. The student whose record is noncompetitive just doesn't stand as good a chance to get in. Medical schools take as few risks as possible. I think that's a conservative approach, but it is certainly understandable. It's very difficult to explain to a student with a good academic record why he shouldn't be given a preference over some other students.

As far as this question about the national average on the MCAT is concerned, I think you have to relate that to the individual student. I don't think that I would prescribe a course of studies for premed students that would be appropriate for all of them. I think there are some students who are going to go on to certain types of careers in medicine, medical research perhaps, who may benefit a great deal from electives in science in their undergraduate years. I think there are students who can take humanities until it comes out of their ears, and it will not give them any more insight into human behavior, or make them more sensitive to people's problems, than if they never took these courses. I think that it is rather glib to think that, because a student has taken certain subjects, he is prepared to be a better doctor. It obviously doesn't work out this way. We understand the problem, which is the reason why, I think, we want to get together with the premedical advisors. We want as much information as possible about the personal characteristics of the applicants, and that can only come from letters of recommendation.

With the pass-fail system, I think it is inevitably going to place more and more weight on the evaluation of the institution from which that applicant comes. We see it now at UC, Santa Cruz. We cannot evaluate a student's performance if he took only pass-fail courses. If the student wishes to, he can get grades in the sciences, but he doesn't have to. These are very difficult candidates for medical schools to evaluate. I think that, as long as there are just a few schools with the pass-fail system, these students are probably not getting as much attention as the other students who are ranked in their class, and have a numerical grade point average. It's just human nature for people on an admissions committee to place more faith in a number, rather than to try to evaluate other and more subjective factors.

DR. SCHWARZ:*

Admissions matching would certainly eliminate the bidding and buying that occurs in some institutions in the country. Washington lost two excellent students that way, and we resented it.

I'd like to comment on premedical advising and on getting the attention the admissions committee. Dr. Mendoza, sometimes it's like the young American traveling in Mexico who saw a young man beating his burro. He jumped out of his car and said to the young man, "You shouldn't do that. All you have to do is talk to him and he'll listen." The Mexican said, "Show me how this is done." So the American went over to the edge of the road, obtained a big club, and hit the burro between the eyes. The young Mexican then said, "Why did you do that?" The American replied, "In order to talk to him, you first have to get his attention."

DR. BEILBY:

I have a comment on the matter of letters of recommendation that we have found useful when medical school people have visited with us. We pulled out old letters of recommendation, sat down with the medical school people, asked them to read the letters, and then asked if they would give us their opinion of what they read in the letters. We wanted to check whether they read the same thing out of the letter we were attempting to put into it.

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*Dr. M. Roy Schwarz
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DR. HEXTER:

I'd like to make two comments. I was very happy to hear Dr. Mendoza say what he said. He represents an institution like mine, and I suspect he fears the standardized application the way I fear it. I think it is going to reduce good students to mere numbers.

I'd also like to reply to Dr. Nelson. I must say in all candor I was very disappointed by his reaction to the communication problem. You kind of patted us on the head, and said you understand our problem, but you don't have the resources to handle it.

I would like to mention to you a standard to which you might aspire. Amherst College last year received 2,800 completed applications to consider. For every student who was not accepted by the college, the counselor of the secondary school from which he came received a report about the student. Now, I would think until Stanford gets to 2,800, they could do the same thing.

DR. NELSON:

I don't think we've got the money, and I don't think I could get it for this purpose. Again, I express my sympathy for that situation.

As to the standardized application, we certainly do not plan to use it to depersonalize our admission process. It's just a matter of convenience; a means of collecting information about the student. The student is being asked to submit letters of recommendation from the premedical people to us directly, and we are not even using it as a screening device.

DR. HEXTER:

Many are using the form for that purpose.

DR. NELSON:

Well, I advise against the preliminary application. We used if for one year, and I just don't think that's a fair way to evaluate applicants to medical school.

DR. ELLIOTT:*

I have a suggestion which we are incorporating into our application down in Florida. It seems to be very simple. At the end of the application there is a line that asks: "Who is the premedical officer on your campus whom we can approach for further inforamtion, if necessary?" That is a way of making

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*Dr. Paul R. Elliott
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sure that we would get, hopefully, the name of the director or committee chairman, because that's the one the student usually put down. But really we wanted it so we could send a copy of every letter to the student to that particular person. This is a very simple thing to add to your application.

DR. KASTON:*

I think that this communications problem is very serious. I have only one suggestion. Very often, advice coming from outside the institution carries much more weight than suggestions from within the institution. In the course of communications from the medical schools to the Deans of the undergraduate colleges, it could be stated that more time should be made available to the premedical committee or advisor. If he has more time to devote to his work, or if his budget were increased, he could visit medical schools for one or two days, get to know some of the people there, something of the curricula, particularly with the changing curricula of today.

Also vice versa; the people on the premed committees could send letters to the Deans of the medical schools to say how important it is for admission committee members to obtain more information on feeder colleges. Ask for additional funds or clerical support. Perhaps this might have more effect than if admissions officers individually had to plead for more money.

MR. JESSEE:

I would like to throw in a plug for the idea of a standardized application, speaking from the standpoint of one who has fairly recently gone through the procedure. I like the idea. It is not going to be a substitute for personal letters or for the personal contact involved in the medical school application process. Rather, it will provide a standardized form to replace the variety of different forms that schools are using anyway. Instead of filling out eight different forms for eight different medical schools, and filing a $10 or $20 application fee with each one, this would simplify things one hell of a lot for the undergraduate student who is trying to get through his Senior year, and at the same time is bogged down with all the different application forms now being used. It would also relieve him of some of the financial burden of filing multiple applications. At the same time, I think it would make screening and evaluation easier from the standpoint of the medical school.

DR. SODERWALL:**

A year or two ago, a committee member from a medical school came down to talk to 100 to 150 premedical students at the University of Oregon. In the first 15 or 20 minutes, he pleaded with the students to enlarge their curriculum,

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*Dr. Benjamin J. Kaston
Department of Zoology
San Diego State College
San Diego, California

**Dr. A. L. Soderwall
Department of Biology
University of Oregon
Eugene, Oregon

and to take all the courses they could and to take full four-year premedical rograms. Then he finished off by saying - and this shows how inconsistent we are - "Of course, we look for the three-year students with high GPA's and take them."

DR. CHAPMAN:*

I'm from Brigham Young University, and that is a large university. Maybe some of you aren't aware of that, as far as the number of students that apply to your medical schools.

I've had a lot of problems that I think are similar to those of admissions committees of medical schools. When we have problems, we have a strong tendency to try to find simple answers. I would like to mention one or two that have come to my attention. Admissions committees look to universities which establish themselves with a reputation of up to 90 percent successful applications to medical schools. I have been using computers to evaluate my students, just as some medical schools do. But what does this do to those good candidates to medical school who are not being accepted on the basis of what you can feed into a computer? What are the answers?

What does it take to have a good committee with a higher acceptance rate into medical schools? I'm in a vulnerable position, because I've been on the committee for 10 years, but I have been chairman for only about four years. The former chairman is now a Dean. The President of our university used to boast at commencement about our acceptance rates to medical school. He hasn't recently.

The former chairman used to tell some premed students they were not going to make it. They might just as well forget it and choose something else. Now, I have the philosophy to encourage them. I'll help them all I can.

This came to my attention at a recent convention meeting of premedical advisors at the University of Utah. Last year, they had four students who talked to us and took part in a discussion. One of these students said, "I came from premedical school..." at the University of Utah, and that premedical advisor is no longer there now. But the student said, "He told me there was no use in going on with the premedical program. If I stayed with it, he would not recommend me, and I could just as well forget it." He said, "I stuck with it, anyhow, and applied to the University of Utah Medical School." I don't know whether he got a club and hit them on the head to get their attention or not, but he got in. He is now doing well enough that they considered him capable of being on that panel. So he called it to our attention and, perhaps, premedical advisors shouldn't play god.

I hope I have aroused some thinking here that maybe will help us to solve some of our problems. I try to evaluate each student the best I can. There are

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*Dr. A. O. Chapman
Brigham Young University
Provo, Utah

too many of them for me to go as strongly as I might on all of them, as I have some problem students.

DR. NELSON:

I think the reality of the situation is that right now about 42 or 43 percent of the students applying for admission to medical school are going to be admitted. Relative to the number of applicants, that's the number of available places. Consequently, there are a lot of good students who aren't going to get into medical school. The places just don't exist. That's the fundamental problem. I'm sure every premedical advisor I know will tell me he has two or three good students this year who were not admitted, and they can't figure out why. In fact, there's no good reason why they can't go to medical school. They're qualified, but we're full. So, we can't take any more students.

DR. SIMON:

We have to close the meeting at this point.

Personally, I believe that the discussion communicated to me, and I think to most of us, a feeling of excitement and enthusiasm. Yes, we have problems. Yes, we have major problems. Indeed, the problems far outnumber the answers. But the panels and the audience convince me that the problems are being approached constructively. One major difficulty which has troubled us for years, the problems of communications across the interfaces between high school and college, between college and medical school, and then beyond, are at last being approached nstructively.

Thank you very much.

APPENDIX I

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APPENDIX II

THE PREMEDICAL COMMITTEE

EDITOR'S NOTE TO APPENDIX II:

In planning for the Conference, a principal objective sought was improvement of communications between medical school admissions officers and pre-medical advisers. One of the mechanisms to facilitate information exchange across this interface is establishment and better definition of the pre-medical adviser system in may colleges.

The editor prevailed upon Professor William Hexter to prepare a "cookbook" to assist institutions to develop or improve their pre-medical adviser systems. Professor Hexter was also requested to indicate the kinds of information about students which should be exchanged between colleges and schools of medicine.

Professor Hexter's "cookbook" is therefore included in these Proceedings. In details, it clearly borders on the ideal in several respects, and may perhaps be more applicable to the smaller colleges than to the larger universities. However, there can be no doubt that the general outline of the system, and the kinds of informational exchanges described by Dr. Hexter would, if widely adopted, add significantly to the effectiveness of both pre-medical advisory and medical school admissions committees. Professor Hexter's work deserves the closest attention by all interested parties.

THE PREMEDICAL COMMITTEE: FORM AND FUNCTION

William J. Hexter, Ph.D.

Preface

The description of the Premedical Committee that follows, how it is made up and what it does, is written with the experience of a small liberal arts college in mind. This implies that most faculty members of the committee know the students applying to medical school by sight and by name, generally having had such students in at least one class. It also means that the number of premedical students per class is generally small, ranging anywhere from 30 to 60, if past experience is to be counted. This allows one member of the committee, generally its chairman, to serve as the premedical advisor, and he is able to accomplish largely by himself the important job of counseling premedical students.

The foregoing is not to imply that the other members of the committee do not play a role in counseling, but to say that the chairman of the Premedical Committee, or premedical advisor, is generally known by all members of the faculty, and students who have questions special to the interests of the premed advisor will be referred to him.

It is obvious to state that other schools differently constructed, varying in size and in interests, will not find the committee herein described always applicable to their peculiar requirements. It is thought, however, that the Premedical Committee as experienced at Amherst might serve as a model upon which other premedical committees could be based.

I. Form

A. Composition

The Premedical Committee is composed primarily of faculty members who are likely to teach courses included in the premedical program. The majority of the committee is comprised of members of the Biology, Chemistry, Mathematics, and Physics Departments. In addition, however, and due in past years to the peculiar required nature of the Amherst curriculum, there were also members of the committee from the English Department, American Studies and History Department, and Psychology Department. Also, various administrative officers are invited to take part in the meetings of the committee dealing with the letters of evaluation. These will include the Dean of Admission, the Dean of Freshmen, the Dean of Students, and the Registrar. These people are very useful to the committee in providing statistical data, information about the background of the student, extra curricular activities, etc. In no instance are breaches of discipline or other matters that may be privileged between the student and an administrative officer brought before this committee. It has proved useful for the Dean of Admission to sit in on a committee evaluating student performance at Amherst, because it provides him, in one sense, with an evaluation of his job as a Director of Admission.

Finally, the College physician and the College guidance counselor are available for advice on premedical affairs such as the nature of the work of medical school, the choice of schools to which application may be made, how to determine one's fitness for the study of medicine, etc. These two people, however, are not concerned with the preparation of the letters of evaluation.

Membership on this committee is not exclusive and generally speaking all members of the faculty who are likely to have more than a casual interest in the teaching of premedical students are asked to serve on it. It might be of interest to note, however, that appointments to the committee are made by the President of the College, who generally will follow the recommendation of the chairman of the committee.

B. Meetings

Formal meetings of this committee are held infrequently. There is only one scheduled regular meeting, usually held toward the end of the second semester of the academic year, for the purpose of collating information for the letters of evaluation. Details of this meeting and how it is conducted will be found later in this report.

C. Role of the Chairman

Most work done in the name of the committee is, in fact, done by the chairman of the committee who serves as premedical advisor to the College. Because of the limited size of the College and the manageable number of premedical students, it is not an overwhelming burden for one person. It is the practice of other members of the committee and even other members of the faculty, only vaguely aware of the premedical program of the College, to be in possession of the name of the premedical advisor, and when students are encountered who have specific questions that must be answered by the premedical advisor they are referred to him. This informal procedure is found to work quite successfully at Amherst.

II. Function

To state simply, at the risk of over-simplification, the principal function of the Premedical Committee is communication - communication with the students on the one hand and with the medical schools on the other. These two aspects will be discussed separately.

A. Communication with the Students

The principal responsibility of the Premedical Committee to the premedical student is to provide answers to the student's questions. Upon entering the undergraduate college, the questions most often asked concern the courses required for admission to medical school. Although the requirements vary somewhat from medical school to medical school, it is possible to generalize these requirements for the students and to translate the medical school requirements into courses relating to the undergraduate institution. Due to the nature of the registration procedure at Amherst, this dissemination of information is done in a reasonably efficient way. Early in September before the opening of school and upon arrival of the freshman class there is scheduled a meeting between the students and the Board of Academic Advisors. The latter is comprised of representatives of all of the academic departments of the College and several interdisciplinary programs. The purpose of the meeting is to put in one place those people best able to answer questions for the freshmen about majors, specific courses, prerequisites, and other related academic matters. The premedical advisor also attends this meeting and students, particularly freshmen who are thinking about a premedical program, have the opportunity to discuss it with the premedical advisor. At that time, each student who expresses an interest is handed a mimeographed sheet indicating the suggested program he should follow with respect to the required premedical courses and the prerequisites for those courses which are required at Amherst College. In addition to freshmen, members of the other three classes who have returned take advantage of this meeting of the board of Academic Advisors to discuss their program. For those students who over the summer have rethought their career plans and have decided to pursue the study of medicine, this opportunity to talk to the premed advisor, and others, is essential.

In addition to receiving this specific information, the student also becomes acquainted with the premedical advisor and the premedical advisor begins his relationship with the student. This advising procedure is repeated toward the end of the first semester when students may reconsider their schedule for the second semester of the academic year, and again toward the end of the second semester when the students, excluding the incoming freshmen, consider their program for the following academic year. At all of these registration times, the Registrar informs the students who the premedical advisor is. He urges those students considering a premedical program to check their schedules with the premedical advisor to see that nothing has been overlooked. Although not required to do so, it has been the experience that most students avail themselves of the opportunity to insure that they are satisfactorily fulfilling the requirements for medical school.

Questions of a different kind asked by students of the premedical advisor concern the procedures for applying to medical school and the responsibilities of the student and of the premedical Committee in support of that application. To answer these questions efficiently a meeting is held, usually in the spring, for all students intending to apply to medical school the following fall for admission to the class a year from that time. This means the present junior class in the College, but occasionally it will also include students from some other classes. At this meeting the name of every student in attendance is recorded. In this fashion the Premedical Committee gets a very accurate registration of who is applying to medical school. The students know that if for some reason they are unable to attend the meeting, they should at least get their name on this list of applying students. Experience has indicated that, in a college small enough for announcements to reach all students, this procedure has been very satisfactory. At this meeting the procedures for applying to medical school are outlined, and the students are apprised of their responsibilities and of the role of the Premedical Committee. They are urged to get their applications in early, to be sure the application is supported by any necessary letters of recommendation, transcripts, etc., and to read carefully the application so that they know what their responsibility is with respect to the supporting documents, and also with respect to the interview, since practices of different medical schools vary. In addition, they are reminded of the usefulness of the Medical College Admission Requirements book, information that was provided them when they were freshmen, but which they often overlook.

Finally, the students are given a two-page memorandum prepared by the Premedical Committee that indicates what the Premedical Committee is, who comprises it, and how the committee letter of recommendation will be composed for each student. Before the student leaves for summer vacation, he is asked to provide the chairman of the committee with a list of the schools to which he intends to apply, and also to provide some brief biographical data which is of interest to the committee in writing the letters of recommendation.

B. Communication with the Medical Schools

1. Letters of Evaluation. Shortly after the meeting of students intending to apply to medical school, the Premedical Committee meets for the purpose of exchanging information concerning the letters of evaluation. Since this is the only formal meeting held during the year, attendance is generally very good. The name of each student who has indicated his interest in applying the medical school is read, and a free exchange of information about this student follows. The chairman of the committee attempts to record, as faithfully as possible, all the germane comments made concerning this student, and who makes them. The variety of responses to the names varies considerably. Some students are almost unknown to the faculty in spite of the fact that they have been in class; whereas others generate animated discussion.

Usually during the early summer, and following shortly upon the meeting of the Premedical Committee, the chairman of the committee will draft a letter of recommendation for each student based upon the comments made by the members of the committee, including the chairman's own personal evaluation and his interpretation of the student's academic performance while in college. These draft letters are then circulated to all members of the committee for any necessary modifications. After receiving the comments from the members of the committee, the chairman prepares the final letter of recommendation for submission to the medical schools. These letters are sent over the signature of the chairman of the committee.

Usually the same letter is sent to all schools on behalf of any individual student, although there are occasionally deviations from this procedure if there seems sufficient reason to do so. Therefore, an original copy of the letter is typed without date or heading and a sufficient number of Xerox copies are made of the letter to account for all the schools to which the student applies. These Xerox copies are then sent to the school with the proper heading and date typed in. In addition, each letter that is sent is signed by the chairman. The chairman of the Premedical Committee is informed by each student early in the fall of his Senior year to which schools the student is applying. The students are also told to report to the chairman if they decide to add additional schools to their list. The original letter, of course, is kept so that the sending of additional letters is no great inconvenience. The premedical Committee at Amherst places no limit on the number of schools to which a student may apply. To do so is considered to be a violation of the student's right to make as many applications as he feels are in his best interest.

In spring of the Senior year the student is asked to fill in a questionnaire sent by the committee that asks the student which medical schools he has applied to, which ones have accepted him, which ones have rejected him, which ones have placed him on a waiting list, and which one he has chosen to go to. As this information accummulates over a period of years, its value as educational material to the premedical advisor increases and assists greatly in counseling students.

It used to be the practice to rank students in the covering letter sent to some medical schools. This information, additional to the accompanying individual letters of evaluation, was thought to be useful for those medical schools that received many applications from Amherst. This practice has been discontinued because it was felt that the difficulty of grouping students with different strengths and weaknesses overcame what little advantage there might be in ranking the students overall.

2. Information from medical schools to college. The Premedical Committee through its chairman and premedical advisor is the point of communication between the medical school and the undergraduate college. Questions concerning individual students, practices of the college, interpretation of transcripts, etc., are often directed by the medical school to the chairman of the Premedical Committee. Those schools which arrange on-campus interviews will communicate their interest through the premedical advisor who then makes the necessary arrangements for bringing student and interviewer together. In addition, it is often possible for the premedical advisor to exchange ideas with the interviewers. This proves to be a very useful form of communication between the medical school and the premedical advisor.

Analogous to this are those occasions when the premedical advisor is invited to visit the medical school to obtain more accurate information for the premedical students of facilities, philosophy, and curriculum of the medical school.

A very important interface between the medical school and the Premedical Committee involves the action taken on premedical applications. It is essential for the Premedical Committee to know whether the students from its college have been accepted, rejected, placed on waiting lists, or whatever other action might be taken. Practices among the various medical schools vary greatly in this respect. Some schools inform the student and the premedical advisor simultaneously by means of copies of the letter sent to the student. Other medical schools will send, usually in late spring or early summer, a summary sheet of all the applicants from the undergraduate college and what action was taken. Finally, and regrettably, there are some medical schools that do not inform the Premedical Committee of anything. This breakdown of communication is inexcusable and makes the task of the Premedical Committee a very difficult one. The only source of information remaining as to whether the student is accepted or not comes from the students and is not always immediately available. This is especially distressing in those instances where a particular student is being rejected by a number of medical schools, and the premedical advisor is not aware of this. The counseling role of the premedical advisor, thus, is made more difficult to the detriment of the student.

Epilogue

The foregoing has been a description of one particular Premedical Committee; how it is comprised, its relationship to the students, and its interaction with the medical schools. It seems appropriate to conclude with an ideal made particularly urgent due to pressures caused by increasing applications and the use, more and more, of mechanical devices to assist in the evaluation and admission of future physicians.

To evaluate human achievement, interpret human potential, and predict human possibilities is very difficult. And yet this job is shared, at least in part, by the Admission Committee of the medical school and the Premedical Committee of the undergraduate college. The latter attempts as well as possible to provide the Admission Committee of the medical school with a balanced, informative, and candid evaluation of the student. That these recommendations sometimes do not live up to this promise is not due to the intent of the committee but to the fact that some students truly are faceless. The absence of detailed personal qualities does not always reflect blandness of personality or the lack of admirable character. That Premedical Committees could improve the letters of recommendation does not need further emphasis, but I do wish to emphasize that we could be assisted in our role, if the medical schools could respond in turn by providing the undergraduate institution with a fairly candid analysis of why individual students have been rejected or accepted, although information for accepted students is not as germane.

An ideal way to provide this information would be for each medical school to communicate by letter the reason or reasons why each individual applicant from a given undergraduate institution was rejected. This is, of course, a monumental job and will become yet more difficult as the number of applications increases, but it seems necessary. There are instances when the rejection of a student is obvious to almost everyone involved with his application. However, there are other cases where the academic credentials of the student would seem to be in order and yet, for reasons probably personal, this student is not being accepted by the schools to which he has applied. It would be useful information for the undergraduate school through its Premedical Committee to know the reasons why the student is not accepted. It may be argued that they should have been more aware of the students' complete qualifications, but alack, this is not always true.

It is easy to make what seems like a casual recommendation for the medical schools to take more care in communicating with the undergraduate institutions. It seems almost callous to make this recommendation in view of the increasing number of applications, but it is for this very reason that such action is urged. With the tendency towards standardization of application forms, computerization of applications, and the use of other mechanical devices to speed the process, it becomes essential to retain the human factor in evaluating and selecting future physicians.

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